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FRACTURES OF THE ANKLE*

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KANSAS CITY, MO.

When we discuss fractures of the ankle joint, we are reopening an old chapter in the history of surgery, yet one which seems strangely new to each succeeding generation, and one which still attracts attention and interest. Fractures of the ankle must have been familiar problems both to the ancients and in the practice of the surgeons of the middle ages. It is, however, from the writings of Percival Pott (1713-1781) and Dupuytren (1777-1835) that our present knowledge of the anatomy and mechanism of the production of ankle joint fractures dates. Since the writings of these masters, with succeeding generations many authoritative essays have appeared in which this subject has been so thoroughly elucidated as to make it seem impossible to add to the knowledge already available to those who care to acquaint themselves with it. It seems, then, that this presentation can serve only four purposes; (1) to call attention again to the mechanism of the production of fractures of the ankle; (2) to suggest a working classification for these fractures; (3) to catalogue important diagnostic points, and (4) to outline so far as possible a plan of treatment based on modern conceptions of the problems these fractures present and modern methods of meeting such problems.

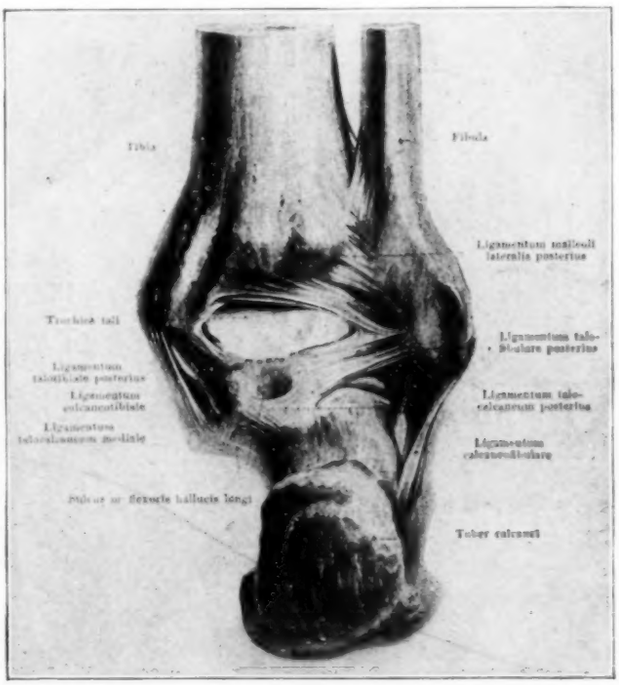

Fig. 1.—Ligaments of ankle, showing band attaching astragalus to fibula (from Spalteholz).

Fractures of the ankle joint include two distinct groups. In the first group there are fractures of the leg bones and of the lower end of the tibia and fibula. The second group comprises fractures of the astragalus. This discussion will be limited to the first group, fractures of the lower end of the tibia and fibula.

In considering the mechanism of the production of fractures of the ankle, there are certain anatomic features in the architecture of the ankle joint which must be borne in mind as they have a very important bearing on the behavior of the bones of the ankle when fractured. The ankle mortise is formed by the lower ends of the tibia and fibula, which are strongly bound together by ligaments. The action permitted by this mortise allows of an essential hinge motion at the ankle joint, though not purely so, as the fibula moves to some extent on the tibia. Both the internal and the external lateral ligaments are strong and tough, and hold the astragalus firmly in the ankle mortise, permitting little lateral motion. From the external lateral ligament, a strong band passes to the posterior surface of the astragalus, binding the astragalus strongly to the fibula. There is no counterpart of this band on the mesial or inner side of the joint; consequently, in all injuries in which the tibiofibular continuity is lost, the astragalus remains attached to the fibula and is displaced with it (fig. 1). This fact is the key to the problem of ankle fractures and must not be lost sight of. It was the basis of the teaching of Pott and other writers that dislocation of the ankle was practically always accompanied by fracture of one or both bones of the leg, and caused Dupuytren to recognize fractures of the fibula as the pivotal injury in fractures of the ankle. With this brief anatomic discussion, we will pass on to a consideration of the mechanism of production of ankle joint fractures.

CAUSES OF FRACTURES OF ANKLE

Direct violence plays a very unimportant rôle in fractures of the ankle (1 per cent according to Ashhurst [1]). Indirect violence is responsible for most fractures of the lower end of the leg bones, acting

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

1. Ashhurst, A. P. C., and Bromer, R. S.: Classification and Mechanism of Fractures of the Leg Bones Involving the Ankle, Arch. Surg. 4: 51 (Jan.) 1922.

through the astragalus in such a way as to produce a breaking strain. The forms of indirect violence are (1) external rotation; (2) abduction or eversion; (3) adduction or inversion; (4) upward compression thrust on the ankle mortise.

1. *External Rotation.*—In this movement the foot is rotated outward around the vertical axis of the leg and the force is transmitted to the fibula as a torsion strain which breaks the fibula in a spiral or oblique direction (fig. 2). The tibiofibular ligaments usually remain intact and there is little diastasis of these bones. If the violence continues, the next injury produced is a rupture of the internal ligament or tearing off of the internal malleolus.

2. *Abduction (Eversion).*—When an abducting force is applied at the ankle, the astragalus tends to rotate outward in the mortise and exerts a bending strain against the fibula and a strong tension on the internal lateral ligament. It is probable that the most frequent

Fig. 2.—External rotation fracture.

sequence of events is rupture of the internal lateral ligament or tearing off of the internal malleolus and then fracture of the fibula. The line of fracture through the fibula may be below the tibiofibular ligament, when it is usually transverse, or above through the slender surgical neck, when the fracture is usually oblique. Diastasis of the tibiofibular joint does not occur when the fracture of the fibula is low down; when high up, it is usual.

3. *Adduction (Inversion).*—With this form of violence, the primary lesion is a tearing off of the external malleolus, a fibular fracture. The continued violent thrust of the rotated astragalus against the internal malleolus causes it to fracture secondarily.

4. *Upward Compressive Thrust on the Tibial Mortise.*—Such fractures are most commonly due to falls from a height sufficient to exert a strong upward impact against the tibial weight-bearing surface. Such force results in the separation of a triangular fragment from the posterior surface of the tibia, the line of fracture extending down into the roof of the mortise. The fragment displaces with the astragalus and fibula. This fracture may occur alone but is usually associated with fractures of the tibia and fibula. There is some lateral displacement of the ankle in this fracture, but the chief displacement is a backward one of the astragalus. Occasionally the same type of fracture involving the anterior margin of the tibia occurs, when it is known as an anterior marginal fracture.

Fig. 3.—Isolated fracture of fibula.

The relative incidence of these four forms of indirect violence has been a matter of investigation. Probably the most recent and authoritative compilation since the introduction of roentgenography is that of Ashhurst,[1] which includes a group of 300 cases. Ashhurst considered external rotation the cause of fracture in

Fig. 4.—Isolated fracture of internal malleolus.

61 per cent of the cases: abduction in 21 per cent, and adduction in 13 per cent; posterior marginal fractures occurred in 19 per cent of the cases. Platt[2] in 116 cases found about the same relative incidences, as did also Kellogg Speed.[3] So much depends on personal

2. Platt, H.: Lancet **1**: 33 (Jan.) 1926.
3. Speed, Kellogg: Surg. Gynec. Obst., 1914.

opinion in interpreting roentgenograms that such statistics can be only approximate.

CLASSIFICATION OF ANKLE FRACTURES

For a clear understanding of fractures as complicated as those encountered about the ankle, it is desirable that some classification be generally adopted. In only this way can confusion in discussion be eliminated and useless discussion as to what is meant by this or that fracture be avoided; in other words, it is essential for clarity that we all speak the same language in discussing fractures of the ankle. Various groupings of the fractures of the ankle have been suggested. There is the historical classification in which the name of some great surgeon has been attached to a particular fracture, as Pott's fracture or Dupuytren's fracture. A classification based on the mechanism of production has been suggested, as abduction fracture or adduction fracture. Finally, we have a classification based on an anatomic or physiologic foundation, as bimalleolar fracture and isolated fracture of the fibula. It is desirable for clarity in surgical teaching that as simple and descriptive a classification as possible be generally adopted. Recognizing the impossibility of using a man's name to describe a fracture accurately and the technical difficulties involved in a classification based on the mechanism of production, I am inclined to believe that a classification based on anatomic grouping is the best, such a classification being simple and at the same time descriptive. Platt, whose paper with that of Ashhurst constitutes the most authoritative recent contribution to this subject, has suggested a classification based on the more elaborate one of Tonton, which seems to fulfil the requirements of simplicity and descriptiveness. The classification here given is essentially that suggested by Platt.

Fig. 5.—Bimalleolar.

Fig. 6.—Bimalleolar fracture with displacement of the astragalus.

Such a classification is simple enough for the purpose of keeping records. At the same time, it is sufficiently descriptive of the condition found. It must be admitted, however, that a classification based on the mechanism of production would from the standpoint of treatment be best were it not for certain disadvantages.

DIAGNOSIS OF FRACTURES OF THE ANKLE

It seems scarcely necessary in a condition so familiar to all physicians as fractures of the ankle to discuss symptomatology. It may be worth while, however, to mention briefly outstanding diagnostic points.

The history of an injury in which the type of violence was forcible movement of the foot is always an important lead toward diagnosis of fracture of the ankle. The injury is a severe one as a rule, and it is practically impossible for the person who has suffered an ankle fracture to walk.

Fig. 7.—Posterior marginal fracture associated with fracture of malleoli showing posterior displacement of astragalus.

The foot is held in plantar flexion and there is eversion or outward displacement of the foot (fig. 8).

Classification of Ankle Fractures

A. Fractures of the Malleoli:
  1. Isolated:
    (*a*) Fibula (fig. 3).
    (*b*) Internal malleolus (fig. 4).
  2. Combined:
    (*a*) Low bimalleolar without displacement of astragalus (fig. 5).
    (*b*) Bimalleolar with displacement of the astragalus (Pott's-Dupuytren's fractures as shown in figure 6).

B. Fractures of the Weight Bearing Surfaces of the Tibia:
  1. Isolated:
    (*a*) Posterior marginal fractures.
    (*b*) Anterior marginal fractures.
  2. Combined:
    Anterior or posterior marginal fractures associated with fractures of the malleoli (fig. 7).

The latter may be slight or marked, depending on the degree of displacement of the astragalus. The internal malleolus is prominent.

There are points of tenderness over the internal malleolus or lower end of the fibula, or both, depending on the type of fracture present.

Increased lateral mobility is probably the best test of ankle fracture except in isolated fracture of the internal malleolus or fibula. This is best tested for by grasping the ankle with one hand, while the other hand is placed beneath the sole of the foot with the thumb and fingers grasping the sides. The foot is then gently moved inward and outward, and any increased lateral mobility is easily demonstrated.

During such manipulation, crepitus can be felt if present. Backward or forward dislocation of the foot may be present with marginal fractures of the tibia. This may be recognized by changes in contour or by increased mobility in a backward and forward direction.

Fig. 8.—Typical displacement according to Pott's original illustration.

Finally, and perhaps most important, in that it gives direct visual evidence, is the roentgenographic examination. If one bears in mind that many fractures of the ankle occur without gross displacement, the value of a roentgenogram in diagnosis is manifest. The roentgenogram should be taken in two planes, anteroposterior and lateral, to insure a complete investigation of conditions. Frequently, an external rotation fracture of the fibula does not show or is barely discernible in an anterior view but is quite evident in a lateral view (fig. 9).

Accuracy in the diagnosis of fractures of the ankle is of paramount importance as in all fractures involving a joint, because of the grave disability which results when such fractures are undiagnosed and receive inadequate treatment or no treatment at all. Especially is it necessary to exercise care in examining and diagnosing the condition of an ankle in which the lesser degrees of displacement are encountered. It is this type of ankle fracture which is most likely to be overlooked to the detriment of the patient and of the reputation of the medical attendant. The more serious forms with evident displacement are as a rule recognized at once and given adequate treatment.

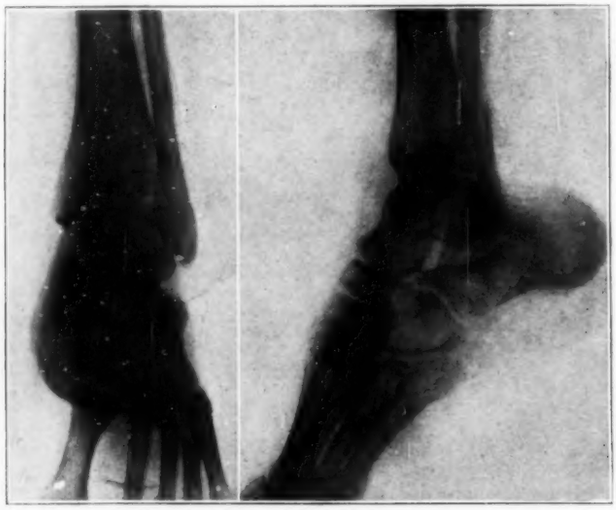

Fig. 9.—Importance of anteroposterior and lateral roentgenograms is evident from this illustration, as the fracture does not show in the anteroposterior view but is very evident in the lateral view.

TREATMENT

It is the routine in our clinic that all ankle fractures be reduced at the earliest possible moment and fixed in a plaster cast.

Reduction is made under full anesthesia. The ankle is grasped with one hand, pressure being made outward in the region of the internal malleolus. The foot is grasped with the other hand well back toward the heel, the thumb resting just below the external malleolus and the fingers grasping the inner side of the heel (fig. 10). With the hands in this position, the foot is inverted and pushed sharply inward. Particular care must be taken to see that the heel is inverted and not just the movable anterior part of the foot, as it is through the posterior part of the foot that the fragments are controlled. Only a moderate degree of inversion is necessary but I have never seen any harm come from too much inversion. When backward or forward displacement of the foot is present, this must be corrected by appropriate manipulation. In the occasional case in which there is an inversion displacement instead of an outward displacement, reduction is the opposite from that described here and the foot is put up in its normal position, care being taken to avoid overcorrection because of the danger of later flatfoot. The essential feature of the reduction is a restoration of the ankle mortise. Failure to achieve this results in a faulty weight-bearing surface at the ankle joint, and a painful and impaired extremity which can be improved only by later operative intervention (fig. 11). Check roentgenograms should be taken after reduction and, if there is any doubt as to the maintenance of the reduction, other checks should be made at intervals.

Fig. 10.—Method of reducing fracture.

With the foot inverted and as close to a right angle as possible, the cast is applied, over a raw cotton bandage which is about one-fourth inch thick, and is immediately bivalved. This enables one to take care of subsequent swelling, allows of easy access to the

entire limb for inspection, and at the same time holds the fractured bones firmly in place (fig. 12). Many experienced surgeons prefer to fix the leg in a pillow splint or fracture box for the first three days to a week before applying plaster. It is my feeling, however, that the fracture can best be controlled by the immediate application of plaster, and that swelling is less and disappears more rapidly with such firm fixation. All agree that immediate reduction is best.

I shall mention Debet's gypsum apparatus only to say that it has become quite a popular form of dressing in ankle fractures, but one that seems more fitted for use in fracture clinics than in general practice.

The after-treatment consists in removing the anterior half of the cast at the end of the second week and starting light massage and toe movements, the posterior shell remaining in place. In four weeks, the foot is removed from the plaster shell and gentle motion is allowed. At the end of from six to eight weeks, depending on the severity of the fracture, the cast is discarded and a shoe used into which a hard felt arch is fitted. This supports the arch and maintains inversion of the foot. At times, it is desirable to elevate the inner edge of the shoe three-sixteenths inch for a month, or until full strength has returned to the supporting muscles.

Any discussion of compound fractures of the ankle and of the open reduction of ankle fractures has been purposely omitted. It is my feeling that these conditions have aspects that entitle them to be considered as special varieties of ankle fractures, and to introduce them here could serve no purpose but that of complicating this presentation. It is sufficient to say that if closed manipulation fails to secure reduction, open reduction should be resorted to, but only by those qualified properly to carry out such an important, and at times hazardous, procedure.

Fig. 11.—Ankle mortise restored.

Old fractures of the ankle with persistent disability require treatment for the relief of pain and to restore function so far as possible. Improvement in both respects can as a rule be secured by proper palliative or operative treatment. Each case, however, becomes largely an individual problem requiring such reconstruction as is necessary to eliminate the pathologic condition present, and a discussion of the problems involved would prove too exhaustive for consideration in this paper.

CONCLUSIONS

Fractures of the ankle constitute a serious injury in that interference with the function of an important weight-bearing joint often results. It is of little importance that gifted or fortunately placed surgeons can point with just pride to a large percentage of successful results in ankle fractures. It is of importance, however, that the standard of treatment generally be of such excellence as to insure a high percentage of good results with strong weight-bearing extremities. A century ago the dictum of Dupuytren that "under the most favorable condition they [fractures of the ankle] almost always leave deformity and lameness, which renders progress difficult or painful" may have had some justification. Today, with the x-ray and modern facilities for treatment, it certainly has none.

Fig. 12.—Bivalved cast with inversion of foot.

Federal Reserve Bank Building.

ABSTRACT OF DISCUSSION

DR. WILLIS C. CAMPBELL, Memphis, Tenn.: We have all seen sufficient evidence in the number of poor results, faulty weight bearing, and painful feet following fracture of the ankle to state that improper or inefficient reduction is quite common. In fractures of the ankle it is most necessary, as in fractures near all joints, that a perfect reduction be secured. In these fractures a very careful system of after-treatment is necessary to observe the relation of the fragments, which not only must be obtained at reduction but must be constantly maintained after reduction. Many of the poor results are undoubtedly due to the fact that there is a slight displacement in some cases when the swelling subsides. Consequently, whatever splint may be employed in the treatment of these fractures, successive roentgenograms should be made so as to be certain that the exact transverse joint line as well as the anteroposterior line is maintained. Close coaptation of the astragalus to the internal malleolus is most necessary, as is also very close approximation of the internal malleolus at the point of fracture. Otherwise, an ununited fracture or displacement is not uncommon in this region. Open reduction is occasionally necessary in fractures about the ankle, particularly in those cases of marginal fractures with gross displacement of the fragments. This, however, is a very rare exception. As a rule, fractures of the ankle can be perfectly reduced and the reduction maintained by efficient apparatus or cast. In reducing these fractures and in the after-treatment, contracture of the achilles tendon must be avoided. This contracture undoubtedly causes many of the disabilities

afterward, and the leverage on the foot in walking may be the cause of deformity occurring when walking begins. When union is apparently solid, weight bearing should not be permitted without apparatus, as ankle brace or arch supports; otherwise varus and valgus frequently complicate the condition with concurrent pain and disability from faulty balance. In some of the mild types of fractures of the ankle, osteoporosis, or bone atrophy, develops and gives subsequent pain which may persist for many months or years, but it can usually be avoided by physical therapy and early weight bearing with efficient support to prevent deformity.

ABSCESS OF THE LUNG

EXPERIMENTAL STUDIES IN CHRONICITY *

IVAN F. WEIDLEIN, M.D.
AND
LOUIS G. HERRMANN, M.D.
CLEVELAND

A few years ago we reported a method for the experimental production of pulmonary abscess. This consisted of freeing into the venous circulation small, artificially enclosed septic emboli. These emboli were constructed of vein segments containing bacteria and blood. By this method [1] we were able to produce abscesses of the lung with great regularity. But such abscesses in the experimental animal differed from those commonly found in clinical cases in their failure to become chronic. Most of them healed within three weeks by cicatrization. Later studies [2] showed that the factors of the virulence of the organisms and the resistance of the host were matters of great importance. When these were appropriately balanced, free unenclosed infected segments of blood clot produced similar abscesses. Again we failed to produce chronic lesions.

The present report concerns factors that may determine chronicity. The factors that appeared worthy of study were cough, the presence of foreign bodies, and the types of organism present, whether primary or secondary invaders.

The work of Van Allen [3] and of Brown and Archibald [4] concerning the influence of artificially produced cough on the chronicity of abscess of the lung indicates that the increased intrabronchial pressure produced thereby drives the infected material farther into the bronchial ramifications and possibly balloons out the cavities, thus prolonging the duration of the lesion. In our experiments relative to artificially induced cough, we produced abscesses by our original method of freeing into the venous circulation emboli contaminated with *B. coli*. After the abscess had formed, the animal was put into a glass-enclosed cage and subjected to the inhalation of free chlorine gas, 1 part in 3,000, for periods of from three to five minutes three times a day. This stimulated attacks of coughing. The usual roentgenographic plates were used to follow the progress of the lesion (fig. 1). By this experiment alone abscesses were prolonged for a period of from four to five weeks, but not for a longer time. Although undoubtedly the factor of cough, which is entirely a mechanical one, is of considerable importance in the chronicity of suppurative processes of the lung, it alone is not able to account for the duration of lesions as we find them in man.

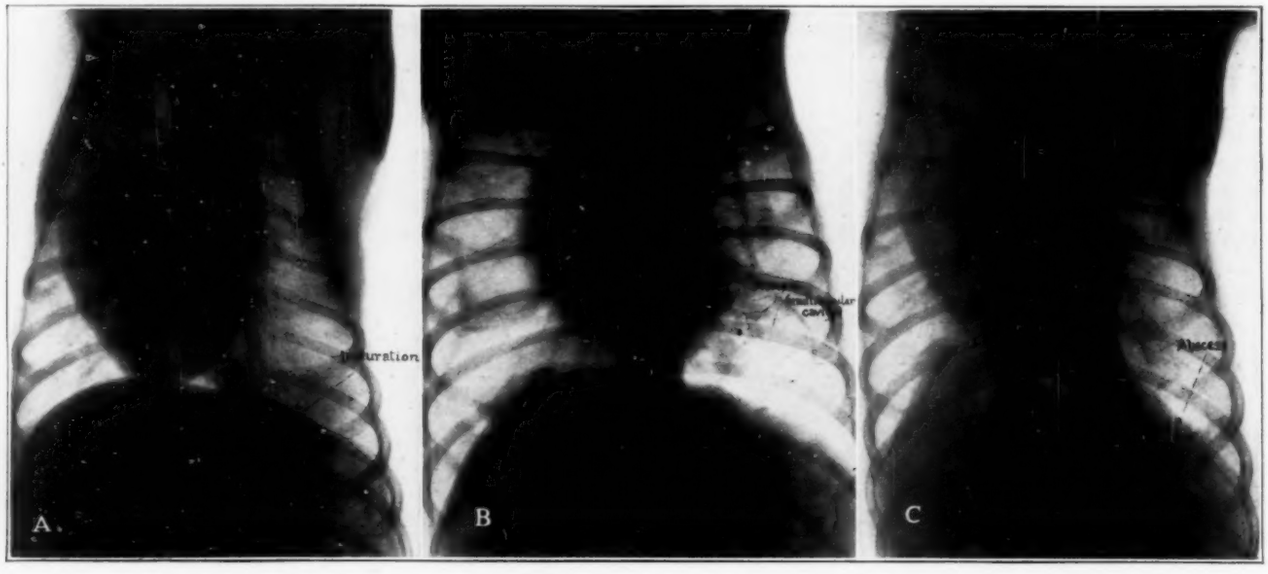

Fig. 1.—Condition in dog 30: *A*, Jan. 26; *B*, Feb. 8, and *C*, Feb. 21, 1928.

We next turned our attention to the anaerobic group of organisms. The experiments of Kline,[5] Smith [6] and others have demonstrated the possibility that even if such organisms were not the original infectious agent they might play an important rôle in prolonging the infection. Here again we investigated both the intratracheal and the embolic routes of infection.

In one series of animals, after preliminary morphinization and under ether anesthesia, small pieces of cot-

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* From the Laboratory of Surgical Research, the Lakeside Hospital, and the Western Reserve University School of Medicine.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Schlueter, S. A., and Weidlein, I. F.: Postoperative Lung Abscess: Experimental Study, Arch. Surg. **14**: 457-528 (Feb.) 1927.
2. Holloway, J. W.; Schlueter, S. A., and Cutler, E. C.: Relation of Immunity to Experimental Production of Abscess of Lung, Ann. Surg. **86**: 165-173 (Aug.) 1927.
3. Van Allen, C. M.: Ueber Heilungsbedingungen des experimentellen Lungenabszesses, Deutsche Ztschr. f. Chir. **209**: 1-13, 1928.
4. Brown, A. L., and Archibald, E.: Action of Cough upon Material in Tracheobronchial Tract: Experimental Study, Am. Rev. Tuberc. **16**: 111-122 (Aug.) 1927.
5. Kline, B. S.: Experimental Gangrene, J. Infect. Dis. **32**: 481-483 (June) 1923.
6. Smith, D. T.: Experimental Aspiratory Abscess, Arch. Surg., part 2, **14**: 231-239 (Jan.) 1927.

ton impregnated with the scrapings from the gum margins of a well advanced case of pyorrhea were clamped into an inverted skin clip and introduced through a bronchoscope into the bronchus. The clip was firmly engaged in the bronchial wall but the foreign body did not completely occlude the bronchus. In only one of these six experiments did the jagged foreign

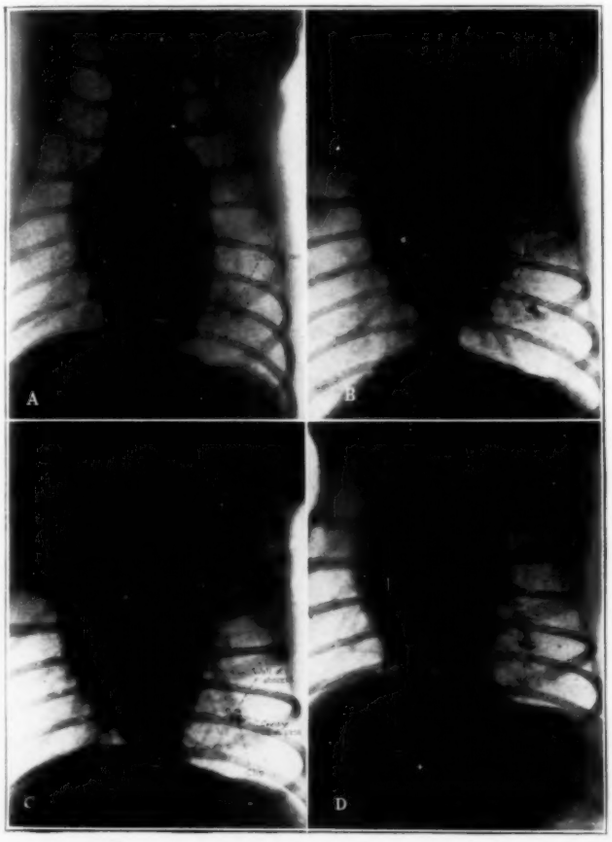

Fig. 2.—Condition in Dog 9: *A*, Jan. 31; *B*, Feb. 6; *C*, March 29, and *D*, April 14, 1928.

body remain in the bronchus for more than twelve days. However, in this case an abscess did develop and the clip was found when the dog was killed on the seventy-fourth day (figs. 2 and 3). At the time of autopsy the abscess was found to be of the bronchiectatic type. The bronchus was patent at the site of the lesion. It was also dilated, had a thickened wall, and contained the foreign body together with foul, greenish pus. From this pus spirochetes and fusiform bacilli could be demonstrated (table 1). We also tried in two cases to repeat the experiments of Crowe and Scarff [7] by infecting the frontal sinuses of dogs with scrapings from the teeth or washings from the antrums of human beings. In neither case did any pulmonary lesion develop after thirty-eight and fifty-four days, respectively.

TABLE 1.—*Intrabronchial Implantation of Foreign Bodies: Material from Pyorrhea Alveolaris in Eyelets of Inverted Skin Clips*

No.	Experiment	Duration of Lesion, Days	Lesion Found at Autopsy	Comment
27	D. 4	98	None	Clip coughed out after 24 hours
28	D. 6	80	Fibrosis	Clip coughed out after 12 days
29	D. 9	74	Bronchiectatic abscess	Bronchial wall thickened; lumen dilated, communicating with bronchus; pus containing spirochetes and fusiform bacilli
30	D. 10	63	None	Clip coughed out after 24 hours
31	D. 11	98	Slight fibrosis	Clip coughed out after 10 days
32	D. 37	65	None	Clip coughed out after 24 hours

TABLE 2.—*Influence of the Spirochetes Together with Other Organisms from the Mouth*

No.	Experiment	Method Employed	Condition	Lesion Found at Autopsy	Duration of Lesion Days
1	D. 8	Vein segment	Living	.....	206
2	D. 12	Vein segment	Lobectomy	Healed fibrosis	157
3	D. 13	Vein segment	Pulmonary hemorrhage	Abscess of the lung	15
4	D. 14	Vein segment	Living	.....	172
5	D. 15	Vein segment	Killed in a fight	Abscess of the lung	20
6	D. 16	Vein segment	Living	.....	175
7	D. 21	Vein segment	Living	.....	153
8	D. 22	Vein segment	Killed	Abscess of the lung (chronic)	84
9	D. 29	Vein segment	Living	.....	138
10	D. 33	Vein segment	Empyema	Abscess of the lung (peripheral)	5
11	D. 63	Vein segment	Killed in a fight	Abscess of the lung	35
12	D. 67	Vein segment	Living	.....	68
13	D. 17	Blood clot	Empyema	Abscess of the lung	19
14	D. 18	Blood clot	Empyema	Abscess of the lung	42
15	D. 19	Blood clot	Distemper and mange (killed)	Abscess of the lung (chronic)	66
16	D. 20	Blood clot	Killed	No demonstrable lesion	59
17	D. 23	Blood clot	Empyema	Abscess of the lung	4
18	D. 24	Blood clot	Killed	Abscess of the lung (chronic)	51
19	D. 30	Blood clot	Empyema	Abscess of the lung	46
20	D. 32	Blood clot	Empyema	Abscess of the lung	9
21	D. 35	Blood clot	Pulmonary hemorrhage	Abscess of the lung	23
22	D. 39	Blood clot	Killed	Abscess of the lung (chronic)	101
23	D. 40	Blood clot	Living	.....	132
24	D. 43	Blood clot	Living	.....	130

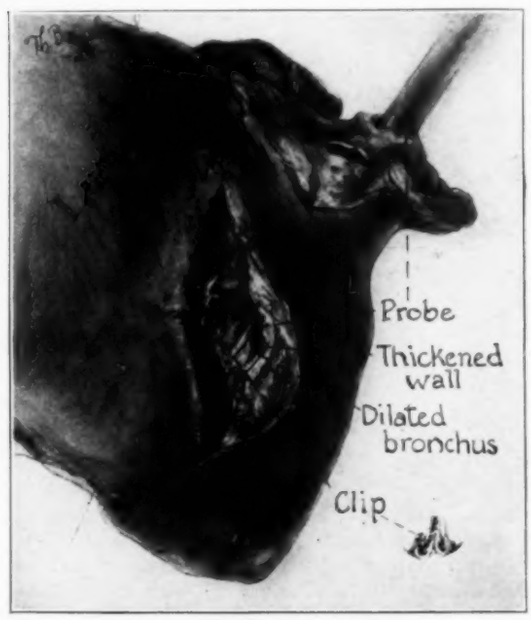

Fig. 3.—Condition in dog 9 at autopsy.

7. Crowe, S. J., and Scarff, J. E.: Experimental Abscess of the Lung in the Dog, Arch. Surg., part 2, **16**: 176-178 (Jan.) 1928.

The fact that Allen,[8] Smith[6] and Crowe[7] produced abscesses of the lung by means of material introduced into the respiratory tree appears to depend on the complete occlusion of the air passages for a sufficient length of time to allow the anaerobes to grow. Our experiments indicate that it is doubtful whether such lesions are possible with only partial occlusion. The rôle played by the foreign body as a source of irritation is probably of minor importance, unless actual injury to the bronchial wall results.

The other phase undertaken by us was to introduce the same anaerobic material from the teeth into the blood stream in an embolus. This material consisted chiefly of spirochetes, vibrios and fusiform bacilli. Two forms of emboli were employed. One consisted of a vein segment ligated on both ends and containing blood and organisms, while the second was an embolus consisting of blood impregnated with anaerobic material and allowed to clot before being introduced into the circulation. In all cases the development of the lesions was followed by means of the roentgenographic films (fig. 4 and table 2).

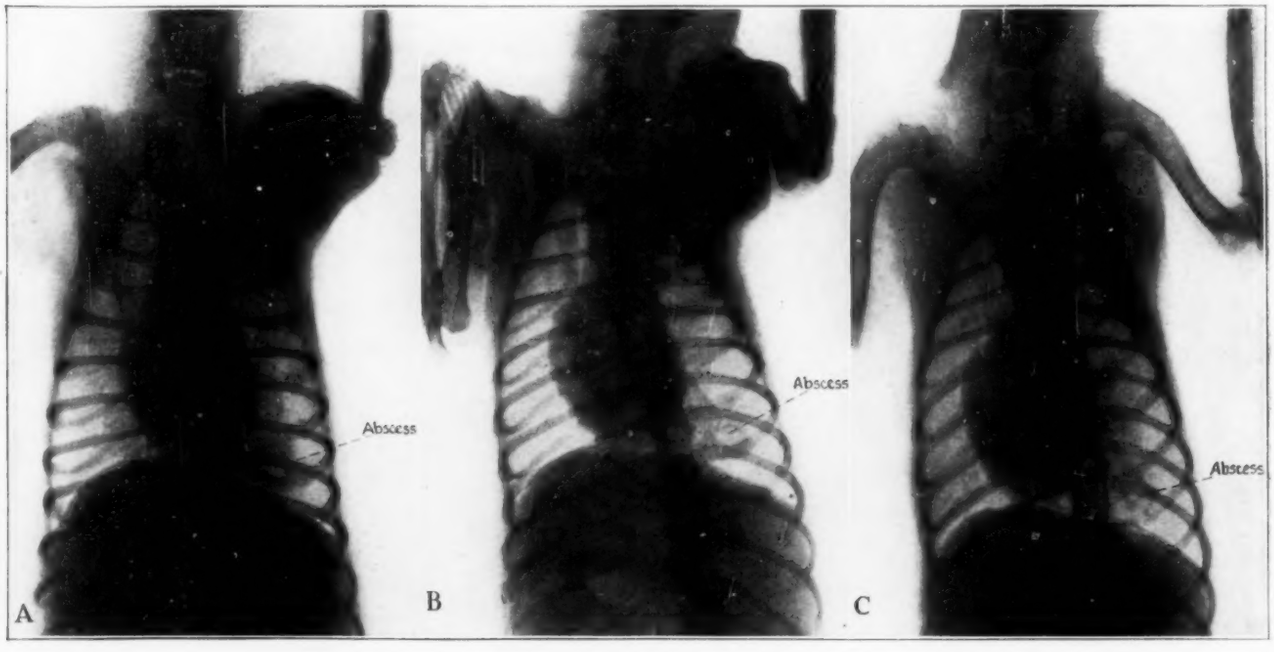

Fig. 4.—Condition in dog 24: *A*, Jan. 26; *B*, Feb. 15, and *C*, March 5, 1928.

The anaerobic bacteria from the oral cavities, which were composed chiefly of spirochetes and fusiform bacilli, although there were innumerable other forms present, produced lesions more nearly simulating the chronic abscesses of the lung as found in man. These abscesses were characterized by an irregularly shaped cavity lined with a grayish exudate and surrounded with a thick fibrous wall. They contained thick pus, often greenish and with a foul odor. In the true parenchymatous abscess of the lung, it seems most logical for the infection to travel by means of the blood stream. Such a statement does not seem at all far-fetched when one stops to consider the frequency of abscess of the lung following operations around the nose or throat. We are all very familiar with the foul odor of the slough in cases following tonsillectomy or in those in which the nose is packed for any length of time. The work of Fetterolf and Fox[9] has clearly demonstrated the occurrence of thrombi with bacterial contamination in vessels of operative wounds of the tonsillar regions. As further proof of blood stream invasion by these anaerobic bacteria, Kline[5] has demonstrated abscesses of the brain with demonstrable spirochetes and fusiform bacilli in cases of pulmonary spirochetosis.

Our experiments would seem to point out that the presence of certain anaerobic organisms is of importance in the production of chronic pulmonary abscesses. Whether these infectious agents reach the lung in man by way of air passages or the blood stream is still a debatable point. However, under experimental conditions insufflated material must actually block the air passage completely, as well as injure the bronchi, before an abscess can be produced. This fact, coupled with the observation that the arsenical drugs which will kill off the spirochetes rarely if ever cure pulmonary abscess in man, even though they alleviate the condition, suggests that these organisms are probably secondary invaders.

Undoubtedly the bronchiectatic type of abscess has its beginning from the bronchial tree. This is the type of lesion that follows the inhalation of a foreign body or of grossly contaminated material which becomes lodged and occludes the finer ramifications. It is this type of lesion which so readily responds to treatment when the foreign body or obstructing material is removed and the cavity is aspirated endoscopically.

ABSTRACT OF DISCUSSION

DR. CHARLES W. RICHARDSON, Washington, D. C.: Abscess of the lung has interested me for a good while. I have studied it from many points of view. I was inclined to believe at first that it was of hematogenous or lymphogenous origin. The more I see of these abscesses, however, the more I believe that they are aspiratory. From the clinical point of view, the abscess which appears in the lung following operative work on the

8. Allen, D. S.: Etiology of Abscess of Lung: Experimental and Clinical Studies, Arch. Surg., part 2, **16:** 179-191 (Jan.) 1928.

9. Fetterolf, G., and Fox, H.: Reaction of Paratonsillar Tissues to Tonsillectomy: Study in Etiology of Post-Tonsillectomy Pulmonary Abscess, Am. J. M. Sc. **166:** 802-825 (Dec.) 1923.

upper air tract and tonsils is almost invariably aspiratory in character, and I think it can be prevented. The condition of the abscess and the condition produced in the lung by the spirochete and organisms of that type are not the same. The point I wish to emphasize is that outside of all experimental work, which is apparently convincing, and of all clinical work, which is absolutely convincing, I believe that abscesses of the lung occurring after operation on the upper air tract are aspiratory.

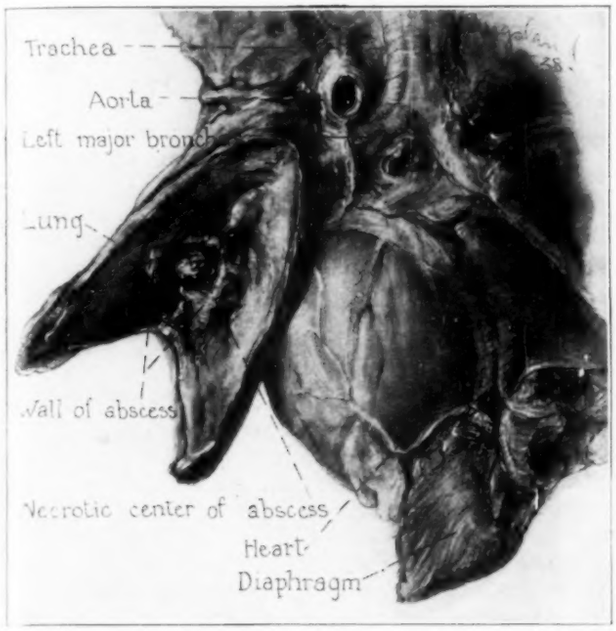

Fig. 5.—Condition in dog 24 at autopsy.

DR. BENJAMIN S. KLINE, Cleveland: The observations of Dr. Cutler and Dr. Weidlein in the experiments reported here and previously on lung abscess are excellent. The conclusions that they draw, however, offer a good deal of ground for controversy. The results of their experiments lead them to believe that postoperative pulmonary conditions usually result from embolism from the operative site. Although they have had little success in producing pulmonary inflammations by the intrabronchial route, others, including ourselves, have not had any difficulty in doing so. Concerning the lesion produced by spirochetes and fusiform bacilli from gingival exudates, it is really gangrene and not abscess. These two conditions should be differentiated from each other by an examination of the washed sputum, since patients with gangrene frequently recover completely following arsphenamine therapy (0.9 Gm., intravenously, every seventy-two hours). At the Mount Sinai Hospital of Cleveland in the past five years, there was complete recovery in eleven of fifteen properly treated cases of gangrene of the lung. Some of these patients were moribund on admission. These cases are ordinarily considered as abscess of the lung. As a matter of fact, in the past five years gangrene of the lung has been observed three times as frequently as true pulmonary abscess. The condition in the brain in one of our cases of pulmonary gangrene was that of gangrene and not abscess, as stated by Dr. Weidlein. It is interesting to hear that Dr. Cutler and Dr. Weidlein were able to produce a progressively enlarging pulmonary lesion with gingival exudates containing oral spirochetes whereas previously, with pyogenic organisms, they were unable to do so.

DR. I. F. WEIDLEIN, Cleveland: Whoever understood me to say that all cases were embolic in origin misunderstood me. I think, however, that the cases should be judged on the basis of the pathologic observations, not on the data obtained by study, because, after all, there are two great groups mostly, the bronchitic type and the parenchymatous type; one has its beginning in some blood stream infection, and the other undoubtedly comes by the aspiratory route. Dr. Richardson said he was convinced that acute abscess came by the aspiratory route. I think that we as clinicians are concerned less with acute cases than with chronic cases, because most acute tuberculous abscesses are diagnosed as pneumonia and will heal spontaneously in a short time, but in the chronic types there is no assurance of cure. Dr. Kline's belief that the condition is gangrene rather than abscess is hard to explain, but the point I want to emphasize is that we have two distinct types and two sources in the beginning.

CONDUCTION DISTURBANCES IN ACUTE RHEUMATIC INFECTIONS*

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AND
WALTER G. REDDICK, M.D.
DALLAS, TEXAS

Since the introduction into clinical medicine of instrumental methods of cardiac examination, disturbances of conduction have frequently been demonstrated in the course of acute infectious diseases. These disturbances, of which only the more severe grades produce change in the rhythm of the heart beat, may occur in any acute infection at the height of the disease or during convalescence, but are most common in acute rheumatism. In the course of about one year, cases illustrative of all the forms of disturbed conduction were observed by us at the Cook County Hospital. This study covers fourteen cases of acute arthritis in which there was some disturbance of auriculoventricular conduction.

Simple prolongation of the conduction time was present in eight. Except for a man of 47, the age limits in this group were 18 and 24. Four stated that they had not had rheumatism previously; of these, two gave a history of acute tonsillitis, one of influenza and the other stated that he had not had any previous illness. Twice there were no physical signs of cardiac disease; the electrocardiogram afforded the first evidence. In two cases there were no symptoms or signs of cardiac disease except a systolic murmur at the base, a sign of questionable significance. One of these later developed evidence of mitral endocarditis. The pulse rates of the eight patients ranged from 84 to 100. In only two were irregularities noted clinically; these were caused by premature contractions. In two, restoration of normal conduction was demonstrated. Two were discharged whose last electrocardiograms showed, respectively, conduction times of 0.24 and 0.26

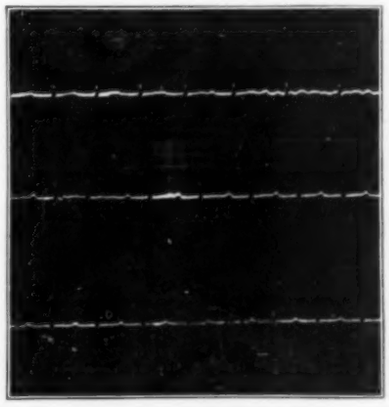

Fig. 1.—Prolonged conduction time. One ectopic auricular beat is followed by the usual prolongation of the conduction time.

* Read before the Section on Practice of Medicine at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

second; earlier electrocardiograms had shown 0.28 and 0.32 second. Of the other four, we were able to follow one, a young woman with a chronic endocarditis, for four weeks after her discharge. The P-R time was constantly 0.36 second in all of several electrocardiograms obtained through a period of seven weeks. The conduction disturbance in this case may have existed prior to the onset of the acute arthritis for which she came to the hospital.

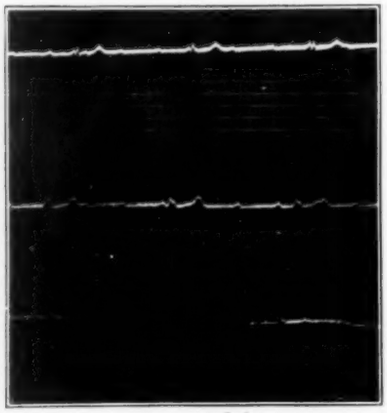

Fig. 2.—Complete block with slow ventricular rate.

Incomplete block was present in two patients. One developed an arthritis shortly after a tonsillectomy. Dyspnea and palpitation were present, but there were no physical signs of cardiac disease. The electrocardiogram showed prolongation of the conduction time with occasional block. Later electrocardiograms showed restoration of normal conduction. The second patient was a man of 28, who stated that he had not had rheumatic disease previously. At his first examination no murmurs were heard and there was no irregularity. The arthritis had been present in a subacute form for some weeks, and through the week prior to his admission there was moderate dyspnea. The first electrocardiogram showed a P-R time of 0.24 second. During the six days following he took 1 drachm (4 cc.) of tincture of digitalis daily. The two days after the digitalis was stopped the electrocardiograms showed prolongation of the conduction time and failure of ventricular response to every third auricular impulse. Electrocardiograms made two and four days later showed normal conduction time and regular ventricular response.

In two instances there was complete block with a slow ventricular rate. The patients were men, aged 22 and 24. The first stated that he had not had rheumatism or allied infections, but the conditions of mitral endocarditis were present. On admission the temperature was 100.8, and the pulse rate was 48. The electrocardiogram showed a ventricular rate of 36 and an auricular rate of 100. Four days later the mechanism was normal, with a conduction time of 0.36 second. Eight days after this the P-R time was within normal limits.

The second patient with complete block was admitted with an acute arthritis from which he had suffered about three weeks. While stating that he had frequent sore throats, he said that he had not had rheumatism; he had had influenza. At the first physical examination the cardiac borders were within normal limits, the rhythm was regular, the sounds normal and the rate 84. On the ninth day in the hospital the pulse rate was 32. The electrocardiogram showed complete block with a ventricular rate of 36 and an auricular rate of 120. The blood Wassermann reaction was positive, although there was no history of venereal disease. The block was regarded as of syphilitic origin, and potassium iodide was given. For several days the slow pulse was a constant finding. Then it was observed that this was often interrupted by a normal rate. Thirteen days after the discovery of the block an electrocardiogram showed normal auriculoventricular sequence with a conduction time of 0.34 second. The slow rate of complete block was not observed again. During the period in which these disturbances appeared and receded the temperature was often above normal, but the rise rarely exceeded 1 degree. A second Wassermann test after one month gave a negative reaction. In the presence of these confusing results, a final answer as to the etiology of the block cannot be given. The administration of potassium iodide alone is not likely to effect the disappearance of a positive serologic test. The sudden appearance of the block during the course of an acute arthritis and its subsidence as the acute infection receded point to the rheumatic infection as the etiologic factor. If we accept the positive serologic test as correct, it seems a reasonable inference that the block resulted from the injurious effect of the acute infection on conducting tissue already injured by an old syphilitic process.

In two patients, a woman of 18 and a girl of 9, complete auriculoventricular dissociation with a rapid ventricular rate was found. Both patients had chronic mitral disease and acute arthritis. The child had pericarditis and probably an acute exacerbation of the endocarditis, and was seriously sick. In the first case an electrocardiogram made five days after admission, while the temperature was 101 every day, showed complete block with an auricular rate of 110 and a ventricular rate of 83. After eight days a second electrocardiogram showed normal mechanism. At this time the patient was almost afebrile. At no time was the pulse irregular, and the block was unsuspected until its instrumental demonstration. In the second case the auricular rate was 136 and the ventricular 71. Twelve days later the normal mechanism was found. This was maintained in three later electrocardiograms.

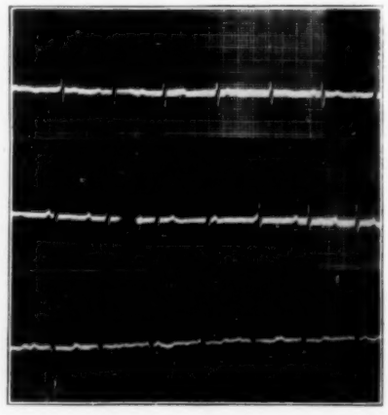

Fig. 3.—Complete block with rapid ventricular rate.

The first patient did not take digitalis. The second, the 9 year old child, was given 1 ounce (30 cc.) of the tincture within twelve days. Her weight was not recorded, but the dosage is large. The electrocardiogram showing auriculoventricular dissociation was obtained at the end of this period. The digitalis was stopped. Two weeks later, after normal conduction was again present, the tincture was given again in doses of 30 minims (2 cc.) a day for twelve days. At this time the acute symptoms had almost disappeared. After this course of digitalis the electrocardiogram did not show signs of digitalis effect. The larger dosage in the first course may have been the single etiologic factor in the production of the dissociation, but it is not unreasonable to assume that to the effect of the

drug was added the predisposition to impairment of conduction, so common during acute rheumatic fever.

A review of these cases discloses a striking inconstancy of symptoms and physical observations. Acute myocardial disease is not consistently revealed by the usual methods of clinical examination. In only one instance, however, was there an entire absence of signs or symptoms suggestive of heart disease. We may conclude that while disturbances of conduction due to myocardial disease are often present in cases of acute rheumatic infection without definite clinical evidence of heart disease, it is also true that myocarditis is not often entirely latent, without minor signs or symptoms which should suggest such involvement.

Mackenzie [1] was probably the first to note the occurrence of temporary heart block as a sequence of acute infection. In 1902 he reported such a case after influenza. In 1910, Peabody [2] reported a case of incomplete block during rheumatism and discussed eight cases previously reported. Gerhardt [3] had already reported a case of complete block occurring in the course of rheumatic fever. This was varied with incomplete block and with normal mechanism associated with prolonged conduction time. Magnus-Alsleben [4] reported the case of a man, aged 32, who had suffered with attacks of vomiting, dizziness and loss of consciousness during an attack of rheumatism insignificant in itself. At these times the pulse was very slow; once the rate was 34. Parkinson, Gosse and Gunson [5] studied fifty cases of inflammatory rheumatism. Some degree of auriculoventricular block developed in fifteen. Eleven of these showed prolongation of the conduction time, and four showed partial block. No case of complete block was observed. These authors regard complete block as very rare.

The etiology of these disturbances has been the subject of study and speculation since their first description. Three principal theories have been proposed in explanation; toxic, nervous and anatomic. The first ascribes the abnormality to a direct effect of toxins on the conducting system; the second to a heightened vagal effect or increased response to vagal control under the influence of the toxins of infection, and the third to structural changes involving the bundle of His, acute inflammation, vascular change and edema.

While the vagus is known to have an inhibiting effect on the conduction process and may under stimulation produce inhibition of conduction up to the point of complete block, simple vagal effect is not an acceptable explanation in the light of the anatomic facts that have been accumulated. The patient of Gerhardt, already mentioned as having had a complete block in the course of rheumatic fever with pericarditis, died some four months later from typhoid. Gerhardt found, microscopically, infiltration limited to the bundle of His and the region closest to it, and thickening of the intima in the arteries and their branches supplying the part. He regarded these changes as "the residue of an acute inflammation, which developed in the coure of a rheumatic pericarditis." Butterfield [6] and Naish and Kennedy [7] have reported cases correlating the occurrence of block in acute rheumatic fever with inflammatory involvement of the bundle. Cohn and Swift [8] studied the various cardiac anomalies arising in the course of acute rheumatic fever, and state that "these are signs which are to be taken as evidence that the heart is affected by the rheumatic process even though an inference cannot be drawn as to the nature or permanence of the injury." After a similar study, with almost identical results, Rothschild, Sacks and Libman [9] say: "These observations are of importance, first, because they demonstrate that the myocardium is implicated in some way in almost every case of rheumatic fever, and, secondly, because the electrocardiographic signs furnish a means of detecting cardiac invasion when other signs are wanting."

In our group eight were taking sodium salicylate in daily doses of from 1 to 2 drachms (4 to 8 Gm.) at the time the block was discovered; in no case was the drug stopped, and in all the normal conduction time was restored while the same dosage was continued. Two patients did not have any salicylate. Another is known to have retained the conduction disturbance long after the discontinuance of the drug. We do not regard the salicylates as responsible for the conduction disturbances.

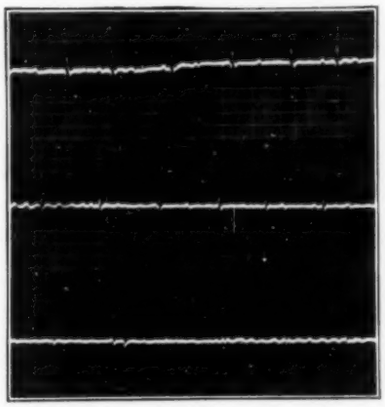

Fig. 4.—Complete block with rapid ventricular rate. Ventricular rhythm is interrupted by ectopic beats of nodal origin.

The power of digitalis to produce various grades of auriculoventricular dissociation is established. Such effects are not uncommon in the course of digitalis therapy. In two of our cases it appeared that the conduction disturbance was precipitated or aggravated by digitalis. The effect of digitalis on the function of conduction may become the major factor in the production of a disturbance of conduction, during the course of infections, in which inflammatory lesions of the bundle are frequent.

From the clinical standpoint these conditions are of importance in diagnosis, prognosis and treatment. The presence of such conduction disturbances is evidence of myocardial disease. Since these signs are often discovered only by instrumental means (and this is particularly true of signs signifying the minor grades of impaired conduction), electrocardiographic study of cases of rheumatic fever should be employed whenever possible. Whether or not such study is possible, various observations have shown the common occurrence of conduction disturbances in the course of acute rheumatic fever. These may first appear after the temperature has become normal.

The immediate prognosis is good. Occurring alone, disturbances of conduction are not serious and usually disappear with the subsidence of the acute disease. They are rarely associated with severe symptoms. The ultimate prognosis must be guarded. These abnormalities indicate myocarditis. It is likely that repeated

1. Mackenzie: Brit. M. J. **2**: 1411, 1902.
2. Peabody, F. W.: Heart-Block Associated with Infectious Diseases, Arch. Int. Med. **5**: 252 (March) 1910.
3. Gerhardt: Deutsches Arch. f. klin. Med. **93**: 485.
4. Magnus-Alsleben: Ztschr. f. klin. Med. **69**: 82, 1909.
5. Parkinson, J.: Gosse, A. H., and Gunson, E. B.: Quart. J. Med. **13**: 363 (July) 1920.
6. Butterfield: Heart **13**: 203, 1912.
7. Naish and Kennedy: Lancet **2**: 1242, 1914.
8. Cohn, A. E., and Swift, H. F.: J. Exper. Med. **39**: 1 (Jan.) 1924.
9. Rothschild, M. A.; Sacks, Bernard; and Libman, Emanuel: Am. Heart J. **2**: 356 (April) 1927.

infections will mean aggravation of the myocardial changes.

The treatment is rest and the prevention, so far as possible, of fresh infections. Rest should be continued until the temperature has been normal for several days and the signs of myocardial involvement have subsided. Myocarditis may also be associated with irregularity due to the occurrence of ectopic beats, often spoken of as extrasystoles, the persistence of which does not necessarily indicate continued activity of the inflammatory process. The active myocardial inflammation may recede without the complete disappearance of irregularity.

The subjective symptoms are of importance. The patient with an acute myocarditis does not feel well, is tired easily, and is depressed and indisposed to exertion. Dyspnea, usually moderate, and palpitation are often present, and cardiac pain, annoying but not severe, is a frequent complaint. Signs of congestive failure are uncommon at this stage. Following an acute infection, especially of the rheumatic group, the persistence of such symptoms without adequate cause should suggest the possibility of an acute or subacute myocarditis.

In the prevention of recurrent infections, foci of infection which may reasonably be accepted as related to the cardiac condition should be removed after the acute process has entirely subsided; the patient should be warned against needless exposure and taught the importance of strict care of himself for apparently trivial infections.

Digitalis is not indicated in the acute myocarditis of rheumatic fever. In the rare case with decompensation, this is open to question, but in the large proportion of cases digitalis is not only useless but may be harmful. This is equally applicable to acute rheumatic endocarditis with which acute myocarditis is often associated. Cardiac irregularities occurring in the course of acute rheumatic fever are symptomatic of myocarditis, and acute myocarditis is often associated with impairment of conduction which is not evident clinically. Effective digitalis therapy may be expected to promote any tendency to block, already produced by disease. It may serve to determine the onset of auriculoventricular dissociation, partial or complete. In a total of 102 cases, Cohn and Swift, and Rothschild, Sacks and Libman found ninety-six with some evidence of myocardial involvement. Most of these abnormalities were disturbances of conduction or of impulse formation. On these functions digitalis exerts a striking effect and may easily aggravate latent tendencies to disorder. There is no medical therapy for these conditions. The use of other cardiac stimulants has no rational basis and is to be condemned in the present state of our knowledge. If we insist on rest until the active stage is past, and protect the patient from fresh infections, we shall have employed the only therapy that should be recommended.

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ABSTRACT OF DISCUSSION

DR. CHARLES A. ELLIOTT, Chicago: It seems fitting to emphasize the desirability of adding electrocardiographic studies to our other methods of observation of acute general infections, particularly rheumatic fever. This is a new point of view. The value of routine electrocardiographic studies is evident, and the availability of a portable apparatus makes such examinations practicable. Variations from the normal, such as prolonged conduction time, low voltage and isoelectric or inverted T waves, may be elecited. None of these phenomena may be detected by the usual means of physical examination. In case such abnormalities are found during the acute febrile period of rheumatic fever or other general infections, they serve as valuable criteria to prognosis and treatment, and may be the sole evidence of myocardial involvement. The advice against the incautious use of digitalis during the acute stages of general infections, especially acute rheumatic fever, is to be commended, especially since it has been demonstrated that digitalis under these conditions may do much harm.

DR. ROBERT L. LEVY, New York: As the authors indicated in their paper, the changes they described are of more than academic interest. We have studied rheumatism of the heart for a number of years at the Presbyterian Hospital in New York and have taken electrocardiograms as a routine twice weekly in all cases of rheumatic fever, often daily during the acute stages. One hundred and forty-five cases of prolonged auriculoventricular conduction have been analyzed. Of these, 54 per cent occurred in acute rheumatic fever; 29 per cent in arteriosclerotic and hypertensive heart disease; 2 per cent in bacterial endocarditis; 7 per cent in syphilitic heart disease, and 8 per cent in a miscellaneous group. In the miscellaneous group, four cases were found in young persons with acute follicular tonsillitis and no other evidence of disease. It is possible that in these patients we were able to detect the earliest evidences of rheumatic invasion of the myocardium. The first point which I want to stress is that prolongation of conduction is of value in differential diagnosis, on the basis of the figures which I have just given. We have come to regard a long conduction time, occurring in a young person who has not had digitalis and who is not syphilitic, as affording presumptive evidence of the presence of a rheumatic infection in the heart muscle. Of the cases of acute rheumatic fever, 27 per cent have shown a long conduction time. Second, the long conduction may persist for weeks or even months after all clinical signs of rheumatism have disappeared. We have observed this repeatedly, often in older persons suffering from their first attack of rheumatism, in whom fever and symptoms may subside within the first days. In these cases one can detect, electrocardiographically, evidence of continued myocardial involvement, often over a period of months. Third, Dr. Carr has said that he believes that salicylate is not responsible for the lengthening of conduction time in the cases which he has reported. This is true; in fact, salicylate exerts quite the opposite effect. Last winter we were able to report four cases of acute rheumatic fever in which prolonged conduction was observed on admission to the hospital, and in which it was possible to demonstrate that the exhibition of salicylate in large doses was responsible for the shortening of that conduction time. When salicylate was omitted, the conduction time would lengthen. On the basis of these observations we were led to conclude that in certain cases, the exhibition of salicylate, in adequate doses, exerts a favorable effect on rheumatic lesions in the heart muscle.

DR. JAMES G. CARR, Chicago: I am particularly impressed by Dr. Levy's remarks about the therapeutic value of the salicylates. Our observations led us to believe that the salicylates are without effect on conduction disturbances, neither causing them nor tending to control them.

Country Doctors.—As shining examples of the country doctor, several names at once present: Marion Sims, who did so much to develop the science of surgery in this country, was a country practitioner. He was regarded as the leading surgeon of his day. Ephraim McDowell, who did the first ovariotomy, far from the maddening crowds, in the backwoods. William Beaumont, our first great American physiologist, who, while at a small army post in northern New York, performed experiments and recorded observations under the most discouraging circumstances, which finally settled the chemical nature of the physiology of digestion. These men may be called the Nestors of surgery and their works the Medical Pilgrim's Progress.—Brown, R. J.: The Vanishing American, *J. M. Soc. New Jersey*, September, 1928.

THE ERYTHROPOIETIC RESPONSE OF THE VARIOUS ANEMIAS TO LIVER THERAPY*

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In the past the clinical application of dietary measures to the control of anemia has been largely empiric, and the pendulum has swung uncertainly from one extreme to another until laboratory workers attacked this problem from the standpoint of the experimentally induced anemia. As a matter of fact the exact composition of foodstuffs was not studied in this country until the beginning of the present century. With reference to the particular question of the value of liver (or its derivatives) in the treatment of anemia, the entire development is less than a decade old and its clinical application dates back about one half of that period. In 1920, Whipple and his co-workers [1] established an unusual potency for liver in the regeneration of blood in standard anemia animals. Their further experiments [2] confirmed this original observation, extending its scope to include severe anemia of long duration. They concluded that "beef liver feeding in severe anemia is associated with a maximal regeneration of hemoglobin and red cells." In their opinion this indicates "the storage within the normal liver of parent pigment substances and suggests that the liver is concerned with pigment function." In their judgment other sources than the liver for this reserve factor in hemoglobin regeneration exist in the kidneys, spleen and muscles in an unknown form, which in the stress of anemia responds to the call for the formation of red blood cells and hemoglobin.[3]

The first application of these principles to the clinical management of anemia was at the hands of Gibson and Howard,[4] who were apparently content to measure the beneficial action of a diet adequate in vitamin, and rich in iron containing fruit, green vegetables, lima beans, sweet potatoes, egg yolk and liver in terms of more favorable nitrogen and iron metabolism. Minot and Murphy were the first observers to appreciate the true significance of the liver factor in the clinical sense and their efforts have opened a new era in the study and knowledge of erythropoiesis and of certain of the anemias. In the first place these investigators [5] reported unusual but uniform remissions in the course of pernicious anemia in patients on a diet rich in liver. These reports indicated an early rise in the reticulocytes immediately preceding the numerical increase in the erythrocytes. Other blood changes have been observed, but the reticulocyte response has been so constant as to make it appear the most available measure of the specific action of any form of therapy in this type of anemia. The clinical improvement in their treated cases closely paralleled the course of the blood changes. These results have been amply confirmed in every quarter. Apparently only two of the manifestations of pernicious anemia, achylia gastrica and posterolateral sclerosis, have failed to respond proportionally. In no instance has free hydrochloric acid been determined in the gastric contents of the patients with pernicious anemia treated by and responding to the Minot-Murphy regimen in the Wisconsin General Hospital, an observation in keeping with the general experience.[6] In the majority of cases certain of the lesser evidences of cord involvement, as paresthesias, weakness and unsteadiness of gait, have been reported improved or relieved; but it is an unusual experience, and scarcely to be anticipated from the underlying pathologic process, that grave cord signs will abate under any form of treatment. However, Bubert [7] and Mason [8] have both reported such an experience in a case of subacute combined sclerosis manifesting an unquestionable return of reflexes after protracted liver feeding. Such general and hematologic improvements as have been obtained in pernicious anemia under the prescribed regimen are obviously dependent solely on the presence of liver in the diet.

Minot and Murphy [9] concluded from their studies that "it would seem as if this organ [liver] contained one or more constituents that permitted the masses of megaloblasts in the marrow to maturate." They suggested further that liver might indeed be the source of the stroma material believed by Whipple [10] to be deficient in pernicious anemia. Peabody [11] supplied the final link in the chain of conclusive evidence of the specificity of liver by studies of the bone marrow of patients with pernicious anemia. He remarked the replacement of the fat of the bone marrow by megaloblasts during the period of recrudescence. With the onset of the remission induced by liver feeding, these immature megaloblasts disappeared and the fat globules became more prominent. There was, in a word, histologic approximation to normal bone marrow. This transformation of the abnormal type of bone marrow occurred coincidently with the appearance of showers of reticulocytes in the peripheral blood stream. Peabody suggested "that the striking clinical results obtained by the feeding of large amounts of liver in the production of prompt and marked remissions may be due to some factor in the liver which affects cell metabolism and promotes the development and differentiation of mature red blood cells."

The results of the application of the Minot-Murphy regimen to twenty consecutive cases of pernicious anemia, in which the diet has been adequately taken, have been uniformly favorable. Remissions have appeared promptly and have been maintained except in two instances, in which the failure to maintain the diet prescribed has been succeeded by more or less serious relapses. The caution of the Harvard group [12] in this

* From the Department of Medicine, University of Wisconsin Medical School.

* Read before the Section on Pharmacology and Therapeutics at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Whipple, G. H.; Robscheit, F. S., and Hooper, C. W.: Blood Regeneration Following Simple Anemia: IV. Influence of Meat, Liver and Various Extractives, Alone or Combined with Standard Diets, Am. J. Physiol. **53:** 236 (Sept.) 1920.

2. Robscheit-Robbins, F. S., and Whipple, G. H.: Blood Regeneration in Severe Anemia: II. Favorable Influence of Liver, Heart and Skeletal Muscle in Diet, Am. J. Physiol. **72:** 408 (May) 1925.

3. Whipple, G. H., and Robscheit-Robbins, F. S.: Blood Regeneration in Severe Anemia: I. Standard Basal Ration Bread and Experimental Methods, Am. J. Physiol. **72:** 395 (May) 1925.

4. Gibson, R. B., and Howard, C. P.: Metabolic Studies in Pernicious Anemia, Arch. Int. Med. **32:** 1 (July) 1923.

5. Minot, G. R., and Murphy, W. P.: Observations on Patients with Pernicious Anemia Partaking of a Special Diet: (a) Clinical Aspects, Tr. A. Am. Phys. **41:** 72, 1926; Treatment of Pernicious Anemia by a Special Diet, J. A. M. A. **87:** 470 (Aug. 14) 1926; A Diet Rich in Liver in the Treatment of Pernicious Anemia, ibid. **89:** 759 (Sept. 3) 1927.

6. Minot and Murphy (footnote 5, third reference).

7. Bubert, H. M.: Subacute Combined Sclerosis: Report of a Case, Associated with Pernicious Anemia, Improved by Minot-Murphy Diet, J. A. M. A. **90:** 903 (March 24) 1928.

8. Mason, E. H.: Pernicious Anemia, J. A. M. A. **90:** 1527 (May 12) 1928.

9. Minot, G. R., and Murphy, W. P.: Liver Diet in Pernicious Anemia and the Distinction Between Aleukocythemic Myeloid Leukemia and Pernicious Anemia, M. Clin. N. Amer. **10:** 1093 (March) 1927.

10. Whipple, G. H.: Pigment Metabolism and Regeneration of Hemoglobin in the Body, Arch. Int. Med. **29:** 711 (June) 1922.

11. Peabody, F. W.: The Pathology of the Bone Marrow in Pernicious Anemia, Am. J. Path. **3:** 179 (May) 1927.

12. Minot, G. R.; Cohn, E. J.; Murphy, W. P., and Lawson, H. A.: Treatment of Pernicious Anemia with Liver Extract: Effects upon the Production of Immature and Mature Red Blood Cells, Am. J. M. Sc. **175:** 599 (May) 1928.

respect cannot be too firmly impressed: "Continued ingestion of some source of the active principle effective in pernicious anemia is necessary to prevent relapse in this disease." The reticulocyte curve has been an almost infallible guide to the efficacy of the treatment and has been of prognostic value in forecasting the time and the probable degree of the erythrocytic rise. In one case in which there had been several previous transfusions, a characteristic reticulocyte shower did not occur,

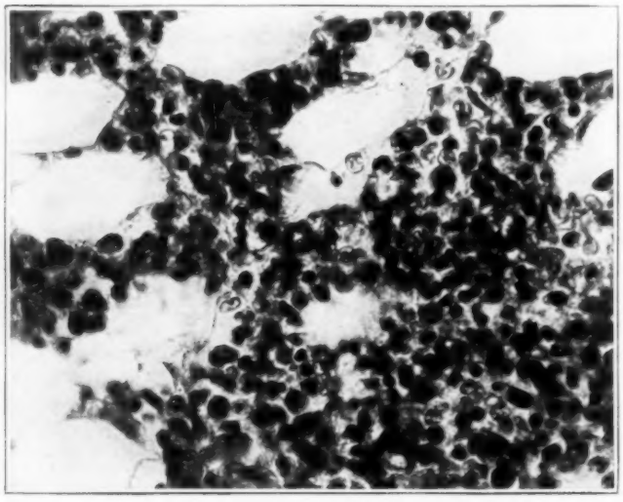

Fig. 1.—Appearance of bone marrow in case 1; reduced from a photomicrograph with a magnification of 800.

and the erythrocytic remission was slowly but steadily induced by liver feeding. Two patients showing advanced posterolateral sclerosis received an inadequate amount of liver and responded very slowly. Both these patients had received many transfusions and ultimately died outside the hospital. A third patient with probable pernicious anemia died in the hospital before a diagnosis could be reached and before adequate treatment was instituted. In general, our experience with the dietetic management of pernicious anemia coincides with that of Minot and Murphy, which has received too general confirmation to require further proof of its efficacy.

The natural outgrowth of the studies of the action of liver feeding was the attempt to isolate the effective fraction. Independently Cohn, Minot, Fulton, Ulrichs, Sargent, Weare and Murphy [13] in Boston and West [14] in New York isolated potent fractions from whole liver. The clinical results from the application of such a fraction to the treatment of pernicious anemia were reported by the Harvard group [15] in 1927. In this report evidence was adduced to show that the reticulocyte rise is inversely proportional to the height of the red blood cells on the institution of liver therapy. A most comprehensive survey of the status of the liver extract in the treatment of pernicious anemia [12] has very recently been made. From various sources a series of 160 cases of pernicious anemia so treated has been collected and the clinical and hematologic results have been entirely comparable with those from the whole liver. Cohn, Minot, Alles and Salter [16] concluded that the active principle was either a nitrogenous base or a polypeptide, of which 0.6 Gm. daily suffices to give the reticulocyte rise in pernicious anemia. Importantly, the purest fraction is still active and all conjectures as to the specific dynamic factor in the diet, its complete protein (liver), its vitamin content and so forth have been put at rest so far as their specific action in pernicious anemia is concerned.

Interesting evidence of the manner of action of the liver extract in pernicious anemia is attested by the following case:

CASE 1.—J. G. W., a white man, aged 52, married, a merchant, was readmitted to the Wisconsin General Hospital, March 16, 1927, in a serious relapse of pernicious anemia, which dated back four years. Advanced posterolateral sclerosis had developed. His treatment prior to this admission had consisted of repeated transfusions, dilute hydrochloric acid, iron and arsenic and a high caloric diet rich in red meats and green vegetables. March 16, he was placed on the Minot-Murphy regimen with the hemoglobin at 40 per cent and the erythrocytes numbering 2,695,000. The patient proved intractable and no form of liver nor liver preparation was long tolerated. The psychic aspect of the case assumed an increasing importance. May 2, the liver diet was replaced by liver extract. The hemoglobin at this time was 32 per cent and the erythrocytes numbered 1,575,000. The dosage of liver extracts (W 293L, W 323L, W 342L) was varied from 3 to 6 vials daily (equivalent to from 300 to 600 Gm. of liver). Significantly, the hemoglobin rose to 80 per cent and the erythrocytes to 3,540,000 by September 11—a total of 131 days of liver extract administration.

At that time a paralytic ileus developed complicated by bronchopneumonia. Two days later the patient succumbed; at autopsy the bone marrow showed only a moderate degree of hyperplasia (fig. 1) which, in the opinion of Dr. C. H. Bunting, was of the normal order and could not be diagnosed as having been caused by pernicious anemia.

Ten patients with pernicious anemia have been treated with various liver extracts, usually furnished through the courtesy of the Harvard Committee. The difficulty in finding cases uncomplicated by previous liver feeding and thereby rendered unsuitable for test purposes is a growing one with the present vogue of indiscriminate liver feeding in all anemias with or without medical supervision. Nine of the ten patients treated with liver extract responded promptly to the therapy. In the other patient (case 1) the trial can scarcely be considered fair in view of the previous transfusions and the advanced posterolateral sclerosis. Nevertheless, he experienced a slow remis-

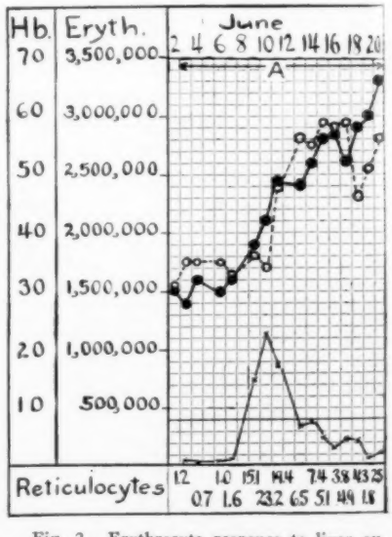

Fig. 2.—Erythrocyte response to liver extract in case 2: *A*, six ampules daily of liver extract W 293; solid line, red blood cells; broken line, hemoglobin; line at bottom, reticulocytes.

13. Cohn, E. J.; Minot, G. R.; Fulton, J. F.; Ulrichs, H. F.; Sargent, F. C.; Weare, J. H., and Murphy, W. P.: The Nature of the Material in Liver Effective in Pernicious Anemia, Proc. Am. Soc. Biol. Chem., Twenty-First Annual Meeting **7**: 69, 1927.

14. West, R.: On Feeding Certain Liver Constituents in Pernicious Anemia, Proc. Soc. Exper. Biol. & Med. **34**: 665 (April) 1927.

15. Minot, G. R.; Murphy, W. P.; Cohn, E. J.; Stetson, R. P., and Lawson, H. A.: The Feeding of Whole Liver or an Effective Fraction in Pernicious Anemia: The Response of the Reticulocytes, Tr. A. Am. Phys. **42**: 83, 1927.

16. Cohn, E. J.; Minot, G. R.; Alles, G. A., and Salter, W. T.: The Nature of the Material in Liver Effective in Pernicious Anemia: II. J. Biol. Chem. **78**: 325 (May) 1928.

sion without a reticulocyte shower. A more characteristic response was obtained in case 2.

CASE 2.—A. L., a white woman, aged 54, married, a housewife, entered the Wisconsin General Hospital, June 2, 1927, because of progressive weakness. She dated her illness back one year to the occurrence of a sore mouth, which she described as consisting of a "raw tongue and inside of lips." Early fatigue supervened. This condition of weakness fluctuated markedly in the intervening year and each recrudescence was forecast by soreness of the tongue. Dyspnea occurred on exertion in the week prior to admission. Occasional tinnitus

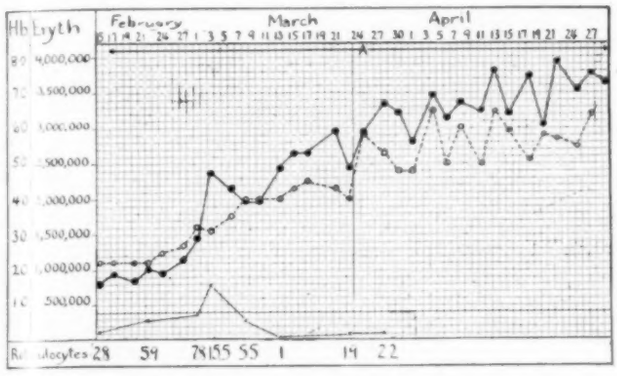

Fig. 3.—Erythrocyte response to Minot-Murphy regimen in case 3: *A*, Minot-Murphy diet; solid line, red blood cells; broken line, hemoglobin; line at bottom, reticulocytes.

was remarked. A loss of 20 pounds (9 Kg.) in a year was reported. The past medical history revealed the control of a toxic adenoma of the thyroid gland twelve years previously by ligation.

On physical examination the pertinent observations were irregular areas of depigmentation in the lemon yellow skin; exophthalmos; icteric sclerae, pallid mucous membranes; bald tongue; postoperative scars on the neck; visibly and palpably enlarged thyroid gland; apical systolic murmur, and a few external hemorrhoids.

The significant laboratory results were the following; blood count: hemoglobin, 30 per cent; erythrocytes, 1,450,000; color index, 1+; leukocytes, 5,050; differential count: neutrophils, 53 per cent; eosinophils, 1 per cent; lymphocytes, 46 per cent; icterus index, 40; van den Bergh reaction, 1.52 units; fragility of corpuscles ranging from 0.52 to 0.27.

Gastric analysis showed an absence of free hydrochloric acid with 6 degrees of total acidity. The stools were negative for parasites, but tests for occult blood were positive, a finding which was discounted because of the presence of meat in the diet. Gastro-intestinal x-ray studies did not show any pathologic conditions.

A diagnosis of pernicious anemia was made and the patient placed on the Minot-Murphy diet without liver. Liver extract W 293L was given in doses of two vials three times a day (an equivalent of 600 Gm. of fresh liver). Six cubic centimeters of dilute hydrochloric acid was administered three times a day. The response to this therapy is clearly shown in figure 2. This gain has been maintained with minor fluctuations and the last determination, April 25, 1928, gave a reading of 74 per cent hemoglobin and 4,010,000 erythrocytes.

An unusual opportunity for a comparison of the action of whole liver and liver extract is afforded by case 3:

CASE 3.—A. H., a white man, aged 62, single, a laborer, was first admitted to the Wisconsin General Hospital, Feb. 15, 1927, with the classic picture of pernicious anemia. His response to the Minot-Murphy regimen is depicted in figure 3. After his discharge, May 27, he followed the prescribed dietary treatment for one week. He was able to work in the tobacco fields through the early summer and then became totally incapacitated for laborious effort by reason of progressive weakness in the fall of 1927.

His condition on readmission (Feb. 20, 1928) was precarious. Nevertheless he was placed on a solution supplied by Prof. E. B. Hart containing in the twenty-four hour dosage the equivalent of iron (25 mg.) and copper (4 mg.) in the accustomed twenty-four hour dosage of liver extract. On the ninth day this medication was discontinued and liver extract 343 was given in two vial doses three times a day. The response was prompt and specific as indicated by the reticulocyte curve, reaching 6.4 per cent on the fourth day and 28.3 per cent on the sixth day (fig. 4). These figures were more prompt and were higher than those obtained on the Minot-Murphy regimen of the preceding year, when the first rise of reticulocytes (5.9 per cent) occurred on the fifth day and the peak (15.5 per cent) on the fourteenth day. The evident difference in the equivalent dosages and the difficulty in ingesting the heavy diet on the first admission may explain the apparent discrepancies in responses.

The remarkable success attendant on the use of the whole liver and liver extracts in pernicious anemia naturally led to their trial in other types of anemia. Whipple and Robscheit-Robbins [17] noted the consummate ease with which the experimental anemia of dogs could be controlled by diet and expressed the opinion that similarly many human anemias might be controlled by appropriate diets. Their standard anemia animals represented the counterpart of certain forms of secondary anemia in the human being, and liver had proved the most efficacious agent in the regeneration of blood in their animals.[2] Indeed, they said: "This favorable and remarkable reaction is invariable in our dog experiments no matter how long continued the anemia level, no matter how unfavorable the preceding diet periods may be and regardless of the substances given with the liver feeding." Earlier work of this group [1] attributed little influence to watery liver extract in this relation. More recent studies by Whipple and Robscheit-Robbins [18] established a regenerating power of 20 Gm. + of hemoglobin over the two week period

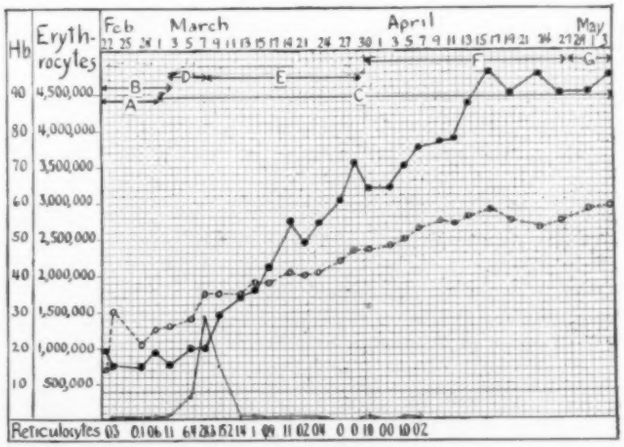

Fig. 4.—Erythrocyte response to liver extract in case 3: *A*, general diet, plus *B*, solution x, 25 cc., twice a day; *C*, Minot-Murphy diet without liver; *D*, liver extract 343, six vials daily; *E*, substitute 416, six vials daily; *F*, substitute liver extract 343, three vials daily; *G*, liver extract 343, two vials daily; solid line, red blood cells; broken line, hemoglobin; line at bottom, reticulocytes.

for a watery liver fraction; 20 Gm. — for an alcoholic fraction, and from 20 to 30 Gm. for the residue of liver. The sum of these three sources of regenerating power is from 60 to 70 Gm., as compared with the

17. Whipple, G. H., and Robscheit-Robbins, F. S.: Blood Regeneration in Severe Anemia: V. Influence of Striated and Smooth Muscle Feeding, Am. J. Physiol. **79**: 260 (Jan.) 1927.

18. Whipple, G. H., and Robscheit-Robbins, F. S.: Simple Experimental Anemia and Liver Extracts, Proc. Soc. Exper. Biol. & Med. **24**: 860, 1926-1927.

standard for whole liver of from 80 to 100 Gm. Riecker [19] maintained that liver feeding does not exert any specific action on the regeneration of hemoglobin but depends for its usefulness in this direction on the availability of its iron content. He was unable to demonstrate any increase in red blood cells in his experimental animals.

An effort to transfer the results of any specific form of treatment for one type of anemia to an entirely different form must take into consideration fundamental differences in the bone marrow reaction (fig. 5).

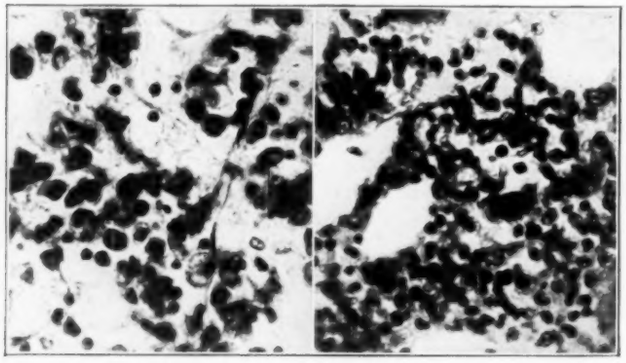

Fig. 5.—Appearance of bone marrow, at left, in pernicious anemia; at right, in secondary anemia (pyogenic basis); reduced from a photomicrograph with a magnification of 800.

In secondary anemia there may occur hyperplasia and extension of the bone marrow; but, as pointed out by Minot and his co-workers,[15] there are no masses of megaloblasts. Hence the type of response is bound to be at variance in the two conditions.

Several reports on the influence of the Minot-Murphy regimen in secondary anemia cases are available. The first two of these, by Murdock [20] and Brill,[21] included only four cases each, and took diametrically opposite points of view. Murdock concluded that " the response to the diet was very much more rapid in the case of secondary anemia than in the primary anemia," whereas Brill remarked "but a slight rise in the hemoglobin and in the number of the red blood cells in the three cases in which the cause of the anemia had been removed before the diet was begun; while no change at all was noted in the one instance in which the case was an inoperable carcinoma." Certain continental reports [22] have been inconclusive. The most comprehensive survey of this question included forty-five cases presented and analyzed by Minot, Murphy and Stetson.[23] In their opinion liver (or liver extract) with iron proved more efficacious than iron alone. As had been predicted,[15] reticulocyte rises were not the rule; but in one patient with acquired hemolytic jaundice, one patient with Hodgkin's disease and five patients with atypical secondary anemia (two of whom were pregnant), appreciable showers of reticulocytes occurred on the exhibition of whole liver or its extract. Sprue has responded favorably to liver feeding, as has also the anemia attendant on infestation with *Dibothriocephalus latus*.[23] From their well digested data they concluded that the essential difference in the reticulocytic response of the various anemias to liver rested on the specificity of the transformation of the "megaloblastic marrow to a normoblastic one" in pernicious anemia, favoring the proper maturation of the red blood cells. With these points in mind, such results as may be obtained from the use of whole liver or liver fractions in secondary anemia must be nonspecific, unless perchance the unusual circumstances of a megaloblastic regeneration occurs in the bone marrow of a secondary anemia.

Forty patients with secondary anemia have received the Minot-Murphy diet in the Wisconsin General Hospital. The group was a comprehensive one so far as diagnoses are concerned. The duration of the anemia was of necessity a very uncertain matter, so that these figures refer to the onset of symptoms of the underlying condition. The results have arbitrarily been classified as negative, doubtful, decline and favorable. Some personal judgment must enter into such a clinical division. Unless some extraneous factor was believed to contribute to an improvement attendant on the institution of the Minot-Murphy diet, a patient showing an increase of 500,000 red blood cells or more was designated as improved. The "doubtful" group will be seen to include several patients with definite erythrocytic increase under treatment; but, as indicated by the footnotes, cases 6, 13 and 27 were obviously influenced favorably by transfusions or the evacuation of an empyema. In case 26 the gain was too evanescent to be counted as a favorable result. The time factor led to the inclusion of cases 30 and 33 in the "doubtful" group, particularly since in both instances the hemoglobin reading was lower at the end of the observation period. Patient 2 experienced very slight improvement for the period of treatment (sixty days); hence he was classed as doubtful.

No correlation has been effected between age, sex, duration, initial blood picture, length of dietary treatment (within reasonable limits) and the erythropoietic response. The range of diagnoses and the paucity of cases in the individual disease groups do not admit of too sweeping generalizations. However, no instance of a favorable response is recorded among the tuberculous or the malignant cases.

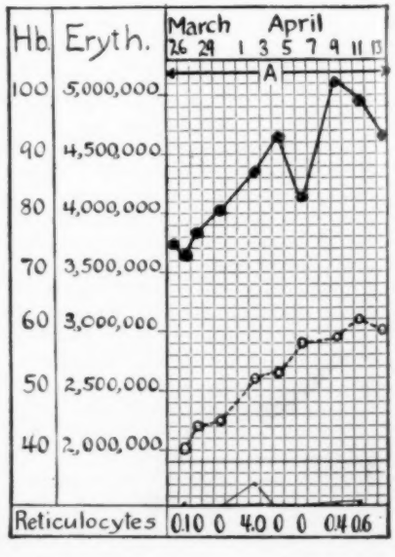

Fig. 6.—Unusual rise in reticulocytes in response to liver feeding in secondary anemia (case 35): *A*, Minot-Murphy diet; solid line, red blood cells; broken line, hemoglobin; line at bottom, reticulocytes.

Fourteen of the total forty cases responded favorably to the diet. (Case 39 is so included because of the marked subjective improvement and the hemoglobin rise, although the red blood cells increased slightly less than the required 500,000.) Seven of these fourteen favor-

19. Riecker, H. H.: A Study of Experimental Anemia in Dogs: The Action of Beef Liver and Iron Salts on Hemoglobin Regeneration, J. Clin. Investigation **5**: 141 (Dec.) 1927.

20. Murdock, T. P.: Rich Liver Diet in the Treatment of Anemias with Report of Cases, Ann. Int. Med. **1**: 123 (Sept.) 1927.

21. Brill, I. C.: The Specificity of the Minot-Murphy Diet in Pernicious Anemia, J. A. M. A. **89**: 1215 (Oct. 8) 1927.

22. Pal, J.: Zur Klinik und Behandlung der perniziösen und der schweren sekundären Anämie, Wien. klin. Wchnschr. **43**: 1343 (Oct. 27) 1927.

23. Minot, G. R.; Murphy, W. P., and Stetson, R. P.: The Response of the Reticulocytes to Liver Therapy: Particularly in Pernicious Anemia, Am. J. M. Sc. **175**: 581 (May) 1928.

able cases showed an increase in red blood cells exceeding one million. The maximum was in case 2, the result of lead poisoning, in which the peak of 6.42 millions was 2.17 millions above the initial level. Anemias secondary to chronic pyogenic foci apparently reacted favorably to this treatment more regularly than the rule.

The results are summarized in table 2.

Particular attention has been directed to the reticulocyte curve in these studies and only rarely has it shown any response to the liver feeding in cases of secondary anemia. A rise of from 1.5 to 3 per cent in the reticulocyte counts has occasionally been noted. In the case of lead poisoning already mentioned, 3.3 per cent of reticulocytes were recorded. In view of the high level of the total red cell count (4.25 millions), this was thought significant. The highest percentage of reticulocytes determined in this group was in patient 35, with cardiac decompensation, in whom on the eighth day there was established a rise in the reticulocytes to 4 per cent (fig. 6). In evaluating the significance of such data one must not overlook the very important consideration of the initial level of the red blood cells at the time of the institution of the diet. Although twenty-seven of the forty patients had initial counts of less than 4 million, only five of these twenty-seven patients had less than 3 million—the number set by Minot, Murphy and Stetson [23] as the upper limit for characteristic responses of the reticulocytes on liver therapy

Before leaving the question of the influence of whole liver feeding on the blood picture of secondary anemia, the preliminary report of Berglund [24] on the unusual activity of fetal liver in this relation must receive consideration. Basing his studies on the theory that the pigment function of the liver is more active in intra-uterine life than postnatally, he administered fetal calf liver in several cases of secondary anemia which had resisted all customary forms of treatment. The results were excellent, but Berglund did not draw any sweeping conclusions from his sparse material.

As a control for the liver diet with reference to its possible influence on erythropoiesis in secondary anemia, six cases (one carcinoma of stomach, two aleukocythemic lymphatic leukemia, one secondary to gastric hemorrhage of ulcer and two cardiac decompensation) were treated with liver extract 343. This group is entirely inadequate for the purpose of control study, but in no instance was there remarked an increase

TABLE 1.—*Data in Cases of Secondary Anemia Treated with Minot-Murphy Diet*

				Probable Duration	Blood Picture					
					Before			After		
Case	Age	Sex*	Diagnosis		Red Blood Count	Hemoglobin	Interval	Red Blood Count	Hemoglobin	Result
1	37	♀	Renal tuberculosis	13 months	3,940	57	17 days	4,060	61	Negative
2	30	♀	Fecal fistula	7 years	4,120	40	60 days	4,570	45	Doubtful
3	53	♀	Carcinoma of the cecum	5 years ?	3,990	44	7 days	3,275	47	Decline
4	40	♂	Periarteritis nodosa	4 months	2,700	45	18 days	2,400	56	Negative
5	56	♂	Prostatic hypertrophy	12 years	2,530	30	19 days	4,110	55	Favorable
6†	31	♀	Incomplete abortion	1 month	3,810	55	19 days	4,810	74	Doubtful†
7	50	♂	Carcinoma of rectum	?	3,980	69	8 days	4,070	69	Negative
8	66	♀	Aleukemic lymphatic leukemia	4 years	3,400	54	8 days	3,585	60	Negative
9	47	♂	Malaria (therapeutic)	20 days	2,570	47	8 days	3,790	55	Favorable
10	40	♀	Endocervicitis	2 years	3,250	25	13 days	4,130	37	Favorable
11	33	♂	Lead poisoning	3 months	4,250	55	35 days	6,420	70	Favorable
12	25	♂	Empyema (1 month); diabetes mellitus (2 years)	1 mo.; 2 yr.	3,120	45	14 days	2,875	48	Negative
13‡	24	♂	Pulmonary tuberculosis; empyema; purulent pericarditis	4 mo.; 8 days	3,270	48	15 days	4,070	45	Doubtful‡
14	47	♂	Achylia gastrica	2 years	3,860	64	8 days	3,245	66	Decline
15	45	♂	Compound fracture with osteomyelitis of tibia	2 days ?	3,070	50	136 days	5,030	72	Favorable
16	67	♀	Carcinoma of cecum	1 year	4,110	42	14 days	4,350	55	Negative
17	36	♀	Subinvolution uteri	2 months	4,160	75	21 days	3,670	42	Decline
18	21	♀	Pregnancy (postpartum)	1 week	3,550	50	7 days	3,230	55	Negative
19	23	♀	Thrombophlebitis after incomplete abortion	6 days	3,930	47	120 days	4,750	68	Favorable
20	51	♀	Fibrosis uteri	1 year	4,590	31	6 days	4,460	43	Negative
21	21	♂	Epithelioma, left groin	7 months	4,790	70	45 days	3,960	51	Decline
22	18	♀	Toxic adenoma, thyroid	1 year	4,490	65	8 days	4,780	65	Negative
23	15	♂	Ulcerative colitis	8 months	3,730	35	7 days	3,330	32	Negative
24	12	♂	Subacute bacterial endocarditis	15 months	?	?	3 days	3,830	30	Apparent decline from earlier counts
25	28	♀	Incomplete abortion	1 month	3,805	41	7 days	4,670	50	Favorable
26§	54	♀	Exophthalmic goiter	1 year	2,190	15	13 days	3,280	18	Doubtful§
27#	47	♂	Pulmonary tuberculosis; empyema; enteritis	16 yr.; 8 mo.	4,405	42	8 days	5,510	69	Doubtful#
28	37	♀	Fibroma uteri	2 years	2,900	23	11 days	3,380	32	Favorable
29	31	♀	Polyneuritis	2 years	3,320	34	28 days	4,330	38	Favorable
30	67	♂	Carcinoma of the stomach	1 year	3,700	40	3 days	4,850	33	Doubtful
31	33	♀	Puerperal anemia (recurrent; each of six pregnancies)	.....	3,990	39	7 days	3,540	38	Negative
32	39	♂	Chronic cholecystitis	4 years	4,350	58	10 days	4,940	58	Favorable
33	29	♀	Pulmonary tuberculosis; laryngitis; enteritis	7 years	3,650	71	120 days	4,280	60	Doubtful
34	34	♀	Hydronephrosis	2 years	4,230	77	25 days	4,290	66	Negative
35	54	♂	Cardiac decompensation	1 year	3,660	40	18 days	4,680	60	Favorable
36	15	♂	Cardiac decompensation	3 months	3,780	40	17 days	4,140	36	Negative
37¶	16	♂	Chronic nephritis with edema (acute recurrence)	1 week	4,170	49	16 adys	4,070	49	Negative
38	21	♂	Cardiac decompensation	3 years	3,900	65	13 days	4,480	57	Favorable
39	21	♀	Empyema	5 years	3,150	41	26 days	4,640	68	Favorable
40	35	♀	Chronic sinusitis	1 month	4,010	48	14 days	4,820	49	Favorable

* In this column, ♂ indicates male; ♀, female.
† Received a transfusion two days prior to the institution of the Minot-Murphy diet.
‡ Had thoracotomy with drainage of empyema one week after beginning diet.
§ Maintained gain for only two days; then erythrocytes dropped to 1,810,000.
# Received a transfusion one day after the institution of the Minot-Murphy diet.
¶ Received a low protein diet, in which liver furnished a maximum source.

24. Berglund, Hilding: A Consideration of Pernicious and Secondary Anemias Based upon Observations During Liver Treatment, read before the Association of American Physicians, Washington, D. C., May 1, 1928.

in either the red blood cells or the reticulocytes. In three of the six cases the red blood cells numbered less than 3 million at the onset of treatment. The inference might be clearly drawn then, were the two groups comparable in number and scope, that the specific maturating agent in liver did not serve any useful purpose in the ordinary case of secondary anemia, and that such effects as are noted in cases of secondary anemia from the whole liver are dependent on its nutritional value, its available iron or some quality other than that so important in pernicious anemia. It might be anticipated, however, in a larger control series that in occasional cases of secondary anemia the reticulocyte count might respond in the same fashion to the liver extract as to whole liver. Indeed, this has been the experience of Minot and his co-workers.[23]

Finally, the workers in the Department of Agricultural Chemistry at the University of Wisconsin have evolved an unexpected rôle for copper in the regeneration of hemoglobin in nutritional anemia of rats. The various steps to their final conclusion and its bearing on the question at hand are interesting evidences of the wide ramifications of many biologic problems. Milk has proved a ration incapable of maintaining the hemoglobin and red blood cells of rabbits and rats in their experience. By the feeding of proper supplementary sources of iron this deficiency has been controlled and the potency of these sources estimated. Importantly they observed that inorganic iron, which alone failed to correct the anemia, in the presence of fresh cabbage, iron-free alcoholic extracts of desiccated cabbage, yellow corn meal or chlorophyl completely "prevented or cured such an anemia."[25] They next remarked the acceleration of the rate of hemoglobin formation on the addition of the ash of lettuce and of cabbage to sources of iron inadequate, in themselves, to prevent or to control anemia. In the present connection particular interest attaches to the determination

TABLE 2.—*Summary of Results*

Results	Negative	Doubtful	Decline	Favorable	Total
Red Blood Count:					
Average before diet	3.841 (14 cases)	3.592 (7 cases)	4.200 (4 cases)	3.478 (14 cases)	3.703 (39 cases)
Average after diet	3.941 (14 cases)	4.481 (7 cases)	3.594 (5 cases)	4.586 (14 cases)	4.217 (40 cases)
Hemoglobin, per cent:					
Average before diet	49 (14 cases)	44 (7 cases)	63 (4 cases)	43 (14 cases)	47 (39 cases)
Average after diet	52 (14 cases)	50 (7 cases)	45 (5 cases)	54 (14 cases)	52 (40 cases)

that dried liver (2 Gm. daily per animal) adequately supplemented the deficient whole milk-ferric oxide diet.[26] Carrying this work a step further, Waddell, Elvehjem, Steenbock and Hart [27] established an unusual potency for the hydrochloric acid extract of liver ash. Iron to the extent of 0.5 mg. a day from this source proved adequate for hemoglobin regeneration under the standard conditions of the experiment. Robscheit-Robbins, Elden, Sperry and Whipple [28] confirmed this observation and determined a regeneration of from 40 to 50 Gm. of hemoglobin on the ash from 500 to 600 Gm. of fresh beef liver under the same circumstances in which from 60 to 100 Gm. of hemoglobin was formed by the feeding of from 300 to 400 Gm. of cooked liver (or 450 to 600 Gm. of fresh liver). Further work of the Wisconsin group [29] led to the conviction "that the ashes and ash extracts contain in addition to iron some other inorganic substance, or substances, vitally concerned in the building of hemoglobin." Lastly in the study of the liver extract (Eli

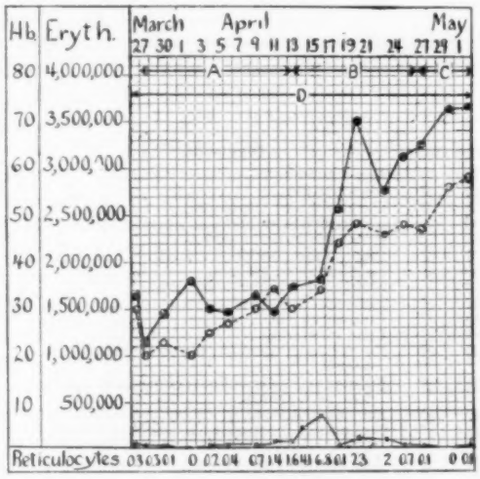

Fig. 7.—Rapid and sharp rise of reticulocytes in response to liver extract in a case of pernicious anemia: *A*, solution x, 25 cc., twice a day; *B*, liver extract 428, one vial, three times a day; *C*, substitute 343, one vial, three times a day; *D*, Minot-Murphy diet without liver plus A, B or C as indicated; solid line, red blood cells; broken line, hemoglobin; line at bottom, reticulocytes.

Lilly and Company), appreciable amounts of copper were isolated. The additions of 0.05 mg. and 0.1 mg. of copper respectively to the accustomed dosage of iron in the ration greatly facilitated the regeneration of hemoglobin in the test rats.[30] They estimate the daily dosage of copper from six vials of liver extract at approximately 4 mg.

The revival of the discarded copper [31] on sound experimental grounds led to its clinical trial in various types of anemia. Although there was no analogy between the nutritional anemia of the experimental animals and pernicious anemia, two cases of the latter condition were treated with a solution supplied through the courtesy of Professor Hart, which was given in amounts containing, as stated before, 25 mg. of iron and 4 mg. of copper, an equivalent of the twenty-four hour content of the liver extract. Case 3 did not show any response of the red blood cells or reticulocytes, but the hemoglobin showed a slight upward tendency. The course of the second case is plotted in figure 7, and is remarkable for the sharp rise of the reticulocytes within a few hours after the initiation of the liver extract therapy. The iron-copper solution had been administered for fifteen days without perceptible subjective or objective change in the patient. A possible slight increase in hemoglobin was discounted as insignificant in view of the method of determination in use (Dare); but after three doses of a liver extract of

25. Hart, E. B.; Steenbock, Harry; Elvehjem, C. A., and Waddell, J.: Iron in Nutrition: I. Nutritional Anemia on Whole Milk Diets and the Utilization of Inorganic Iron in Hemoglobin Building, J. Biol. Chem. **65**: 67 (Aug.) 1925.

26. Hart, E. B.; Elvehjem, C. A.; Waddell, J., and Herrin, R. C.: Iron in Nutrition: IV. Nutritional Anemia on Whole Milk Diets and Its Correction with the Ash of Certain Plant and Animal Tissues or With Soluble Iron Salts, J. Biol. Chem. **72**: 299 (March) 1927.

27. Waddell, J.; Elvehjem, C. A.; Steenbock, Harry; and Hart, E. B.: Nutritional Anemia on Whole Milk Diets and Its Correction with the Ash of Beef Liver, Science **67**: 139 (Feb. 3) 1928.

28. Robscheit-Robbins, F. S.; Elden, C. A.: Sperry, W. M., and Whipple, G. H.: Blood Regeneration in Severe Anemia: Influence of Inorganic Ash of Liver, Kidney and Apricots, Proc. Soc. Exper. Biol. & Med. **25**: 416 (March) 1928.

29. Waddell, J.; Elvehjem, C. A.; Steenbock, Harry; and Hart, E. B.: Iron in Nutrition: VI. Iron Salts and Iron-Containing Ash Extracts in the Correction of Anemia, J. Biol. Chem. **77**: 777 (May) 1928.

30. Hart, E. B.; Steenbock, Harry; Waddell, J., and Elvehjem, C. A.: Iron in Nutrition: VII. Copper as a Supplement to Iron for Hemoglobin Building in the Rat, J. Biol. Chem. **77**: 797 (May) 1928.

31. Hare, H. A.: Practical Therapeutics, ed. 19, Philadelphia, Lea & Febiger, 1925, p. 249.

rather low potency,[32] although only twenty-four hours had elapsed, the first rise of reticulocytes to 4.1 per cent was noted. Further experience is required to explain such reactions. Significantly improved purification of the liver extract has reduced its copper content to one-sixth the original value [33] without altering its specificity in the treatment of pernicious anemia. Of course, the work of Cohn and his fellow workers [16] has established this point beyond equivocation.

The group of cases of secondary anemia offers a more logical point of attack in this phase of the problem, which is being actively pursued. Among the cases of nutritional anemia in infancy and certain of the chlorotic forms in puberty and adult life, analogous circumstances to those of the experimental animal exist and here, if anywhere, comparable results may be anticipated.

CONCLUSIONS

1. Additional confirmation of the specific value of liver and liver extract in pernicious anemia has been gained from the treatment of thirty-two cases at the Wisconsin General Hospital.

2. Fourteen of forty patients with secondary anemia responded favorably to the dietary regimen of Minot and Murphy. This response was apparently not to the specific maturating factor in liver, since no reticulocyte showers comparable to those in the remissions of pernicious anemia occurred on the diet. The failure of erythrocyte and reticulocyte response in the six cases of secondary anemia treated with liver extract lends strength to this position. The necessity for further work on this question is appreciated, particularly in view of the difficulty of controlling all factors of possible influence on the blood picture of secondary anemia.

3. The indiscriminate use of liver in all types of anemia should be discouraged as confusing the picture of undiagnosed blood diseases, creating an empiric practice and establishing an economic burden for the unfortunate patients with pernicious anemia, to whom liver has proved an inestimable boon. The use of liver and liver extract in the treatment of secondary anemia is an experimental problem, the solution of which depends on a close study of these cases, preferably in the clinic and the hospital.

4. Copper is apparently not the active agent in inducing remissions in pernicious anemia. Its status in other forms of anemia in the human being has not been fixed.

32. Castle, W. B.: Personal communication to the author.
33. Hart, E. B.: Personal communication to the author.

Brucella Melitensis-Abortus Infection.—Undulant fever as found in man is contracted from goats, cattle or hogs, and to a large degree all three types of infection are clinically distinguishable. Where goats prevail, as on the island of Malta, the disease is contracted by consuming infected milk or cheese, or by handling infected goats, goat meat, soil or dust. The same mode of infection obtains with reference to hogs or cattle. Both porcine and bovine types have been reported in this country and the relative importance of the two is as yet unclear. Theobald Smith feels that some human cases occurring through ingestion of infected milk are really porcine in nature; namely, cow's milk is contaminated on a farm where hog abortion is in progress. The organism is very resistant and the caprine variety at least will live for eighty days in dust, or more than a month in fresh and salt water. The prick of a contaminated needle is sufficient to cause the disease in man.—Herrmann, E. T., and Edlund, G.: Brucella Melitensis-Abortus Infection in Man, *Minnesota Med.*, September, 1928.

EXPERIMENTAL ANEMIAS, DIET FACTORS AND RELATED PATHOLOGIC CHANGES OF HUMAN ANEMIAS *

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In any discussion of general anemia problems it should be emphasized that the causes of anemia, whether human or experimental, are various and that different animals may differ with one another and with human beings in reaction to a given substance or diet factor. There is a tendency to draw deductions from one type of anemia and apply them to another, and I shall submit evidence to indicate the danger of this procedure. The reactions in animal experiments may give suggestions as to procedure in the treatment of human anemia, but subsequent observations must be careful and long continued on the human cases to establish similarities or differences in the clinical reaction as compared with the experimental. This indicates the necessity for a large amount of careful work, both experimental and clinical, before we can hope to have a satisfactory understanding of this fascinating anemia problem. The important work of Minot, Murphy and Cohn, Gibson and Howard, Peabody and Doan, Koessler and Maurer, Hart and Steenbock, Berglund, Mason and many others is responsible for rapid accumulation of interesting data which make for a clearer vision in this field.

TABLE 1.—*Hemoglobin Production Influenced by Diet*

Dog	Table	Diet, Grams Daily	Hemoglobin Production per Two Weeks' Period, Gm.
24–25	64	Bread, 450	3
19–104	71	Bread, 350	3
24–42	73	Milk, 450; bread, 450	3
19–104	71	Milk, 450; bread, 350	3
20–104	72	Cream, 100; bread, 350	12
24–45	72	Cream, 100; bread, 500	10
24–26	74	Butter, 100; bread, 350	10
24–26	75	Butter, 75; bread, 450	11
24–49	75	Cheese, 100; bread, 450	20
20–1	25	Beef muscle, 200; bread, 400	25
24–25	52	Pig muscle, 300; bread, 300	20
21–67	24	Heart muscle, 200; bread, 300	28
21–67	24	Codfish, 100; bread, 300	9
24–45	65	Fresh fish, 250; bread, 300	10
20–1	42	Spinach, 250; bread, 400	14
20–104	41	Greens, 200; bread, 300	20

EXPERIMENTAL ANEMIAS

In the early experiments of Hooper, Robscheit-Robbins and Whipple [1] a short term anemia was used, but as experience accumulated Robscheit-Robbins and Whipple [2] found that more accurate data were obtained from the long continued severe anemia lasting continuously for months and years. Some of our dogs now have been continuously anemic at one-third normal hemoglobin level for four years in perfect health and activity. Under these conditions there is always present a maximal stimulus to produce new red cells, and the output is largely dependent on the diet intake. Between the short anemia experiments and this long continued severe anemia we have noted differences—for example,

* From the Department of Pathology of the University of Rochester School of Medicine and Dentistry.
* Read before the Section on Pharmacology and Therapeutics at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.
1. Hooper, C. W.; Robscheit-Robbins, F. S., and Whipple, G. H.: Am. J. Physiol. **45**: 573, 1918; **53**: 151 (Sept.) 1920.
2. Robscheit-Robbins, F. S., and Whipple, G. H.: Am. J. Physiol. **72**: 395 (May) 1925.

iron is inert in the short experiments but distinctly potent in the long period anemias.

Two short tables summarize our experience with many common diet factors. These figures give typical values representing a large number of published and unpublished experiments dealing with a continuous severe anemia caused by bleeding in dogs.

For the purpose of this discussion the common food factors may be divided into three convenient groups:

TABLE 2.—*Hemoglobin Production Influenced by Diet*

Dog	Table	Diet, Grams Daily	Hemoglobin Production per Two Weeks' Period, Gm.
19–104	23	Beef liver, 400	100
20–104	22	Beef liver, 300; bread, 300	50
24–49	62	Chicken liver, 200; bread, 250	75
24–25	64	Fish liver, 150; bread, 350	0
21–23	61	Beef kidney, 250; bread, 250	90
24–45	61	Pig kidney, 200; bread, 350	70
24–49	54	Chicken gizzard, 300; bread, 200	85
24–46	81	Bone marrow, powdered, 30; bread, 600	25
19–104	82	Beef spleen, 200; bread, 250	25
24–49	83	Brains, 300; bread, 300	25
24–25	84	Pig pancreas, 250; bread, 350	30
24–32	91	Apricots, 200; bread, 300	40
21–07	92	Peaches, 200; bread, 300	40
24–49	94	Raisins, 300; bread, 350	25
24–46	95	Apples, 250; bread, 350	35
24–49	97	Prunes, 250; bread, 350	35
24–49	97	Raspberries, 250; bread, 350	0

1. The least favorable group for blood hemoglobin regeneration in simple anemia includes grains and breadstuffs, the common vegetables and some fruits, all fish, and dairy products.

2. The average middle group includes some of the leafy vegetables, skeletal muscle including beef, pork and veal, also spleen, pancreas and brains. In the upper middle group also belong many fruits including apricots, peaches, prunes and raisins.

3. The most potent group for blood hemoglobin regeneration in simple anemia is of the greatest interest. Liver stands at the top, and this includes all mammalian liver so far tested—beef, pig, sheep and calf. Chicken liver is equally potent and likewise chicken gizzard. There are expected individual variations, but the full liver diet of from 300 to 400 Gm. of cooked liver daily will result in a hemoglobin output per two weeks period of from 80 to 90 Gm. of hemoglobin. By contrast we note that fish liver is quite inert. Kidney should be especially noted, as it stands practically on a par with liver.

Observation of the remarkable potency of liver feeding in secondary anemia led logically to an attempt at isolation of this active material in purified form. Some of this work has been published [3] and more is to appear shortly. I may say in brief that a watery extract of liver usually contains about 20 to 25 per cent, the alcoholic extract about 20 to 25 per cent, and the water and alcohol extracted residue from 25 to 30 per cent of the active materials which, added to a diet, give that part of the expected hemoglobin production, based on experience with whole liver. This would indicate that several substances were concerned in the production of new hemoglobin and red cells in simple secondary anemia in dogs. I may say here that the liver extract (Lilly) which is potent in pernicious anemia gives only from 10 to 15 per cent of the expected reaction of the whole liver in experimental anemia. This will be discussed later.

3. Whipple, G. H., and Robscheit-Robbins, F. S.: Proc. Soc. Exper. Biol. & Med. **24**: 860 (June) 1927.

IRON

Iron as a factor in blood hemoglobin regeneration is a perplexing subject on which volumes have been written without leading to a complete understanding. It would seem that nothing could be more simple: given a type of anemia with iron administration, either there is a favorable response or there is not. But the story is not so simple. In short anemia experiments we have observed that iron has no effect, but in long continued severe anemia we have observed a favorable effect. This might be explained on the basis of exhaustion of the iron reserve in the severe anemia; but that is not all of the story. We [4] have reported an interesting summation of the effects of liver and kidney plus iron. Large or small doses of iron salts may cause an increased production of blood hemoglobin, but a continuing diet period of similar iron feeding plus a diet of liver or kidney will show the sum of the two expected reactions—the reaction of the iron feeding plus the reaction expected from the liver or kidney diet. This last total sum may show the extraordinary total production of 140 Gm. of hemoglobin per two weeks period over and above the control level. There are many more interesting observations which cannot be discussed at this time.

INORGANIC ELEMENTS

In earlier anemia experiments it has been observed that apricots and peaches were quite potent in the diet and might be responsible for as much as 40 Gm. of hemoglobin production per two weeks period. This observation suggested some active principle in the organic or inorganic salts of these fruits. Robscheit-Robbins, Elden, Sperry and Whipple [5] have recently reported preliminary observations to show that the inorganic ash of apricots is potent in experimental anemia. Also the inorganic ash of beef liver or pig kidney is distinctly potent. In general we may say that these ashes are potent and contain about one half of the active principle contained in the original material as tested in dogs with severe anemia due to hemorrhage. All of this obviously suggests that some metal or group of metals are responsible for this favorable reaction. We have tested a considerable number of metals, and much work is in progress. Some of this work has been

TABLE 3.—*Hemoglobin Regeneration and Inorganic Elements*

Minerals	Amount Daily, Mg.	Hemoglobin Produced per Two Weeks, Gm.	Number of Experiments
*Bread control		2–5	
Iron (chloride)	25	0–10	6
Iron (citrate)	60	10–70	2
Iron (citrate)	300	40–70	4
Copper (tartrate)	40	0	2
Copper (sulphate)	65	13	2
Copper (tartrate) plus iron (chloride)	40 + 140	27	1
Copper (tartrate) plus iron (chloride)	20 + 36	27	1
Copper (tartrate) plus iron (chloride)	40 + 70	60	1
Zinc (chloride)	11	20	2
Zinc (chloride) plus copper (tartrate)	24 + 40	9	1
Manganese (peptonate)	110	0	1
Aluminum (sodium sulphate)	38	0	2
Arsenic (potassium arsenite)	2	0	2
Antimony (chloride)	9	0	1
Iodide (sodium)	420	0	1

* Standard bread ration of 300 Gm. contains 18 mg. of iron. All values are given in milligrams of element except manganese, which is given as peptonate.

4. Robscheit-Robbins, F. S., and Whipple, G. H.: Am. J. Physiol. **83**: 76 (Dec.) 1927.

5. Robscheit-Robbins, F. S.; Elden, C. A.; Sperry, W. M., and Whipple, G. H.: Proc. Soc. Exper. Biol. & Med. **25**: 416, 1928.

reviewed briefly,[6] and some of the experimental data are presented in table 3.

It is readily seen that the iron salts are much more potent than copper or zinc in the doses given, whether alone or combined. A number of elements, including arsenic and iodine, are frankly negative.

CONSERVATION OF HEMOGLOBIN

Conservation of hemoglobin is of great importance in anemias, particularly those associated with hemoglobin destruction within the body. Whipple and Robscheit-Robbins [7] have reported anemia experiments showing the remarkable conservation of blood hemoglobin set free in the blood stream or serous cavities. About 90 per cent of the introduced hemoglobin will be readily conserved and turned out as new red cell hemoglobin in these standard anemia dogs. This explains the vigorous regeneration of hemoglobin and red cells observed by many investigators who use distilled water or poisons to produce anemia and destroy the red cells in the circulating blood. Probably most of the destroyed hemoglobin is conserved and promptly turned over in the body to produce new red cells and hemoglobin. Such anemias obviously do not test severely the capacity of the organism to form new hemoglobin out of food or other material, owing to the exquisite conservation of the destroyed cell products which supply the needed building material in most nearly finished form. Even under such conditions it is probable that much of the destroyed hemoglobin is reduced to split products (intermediates) suitable for storage or reconstruction of new hemoglobin.

The accompanying chart shows in graphic form the various degrees of conservation of hemoglobin. When given by mouth only about 10 per cent of it appears as new-formed hemoglobin in the blood stream. This may be due largely to lack of digestion and assimilation. Long digestion of hemoglobin in vitro with pancreatin does not materially increase this figure when the digest is given by mouth. However, long digestion of hemoglobin with pancreatin may give a clear broth which, given intravenously, may yield 40 per cent in the form of new hemoglobin in the anemic dog. Such experiments suggest a breakdown of hemoglobin as taking place before it is utilized in this type of anemia whenever hemoglobin is given intravenously. Hemoglobin given parenterally will almost always show 90 per cent or even more conservation, but there is usually a sufficient time interval to indicate that much or all of the introduced hemoglobin is broken down to certain intermediates before utilization to form the mature red cell hemoglobin.

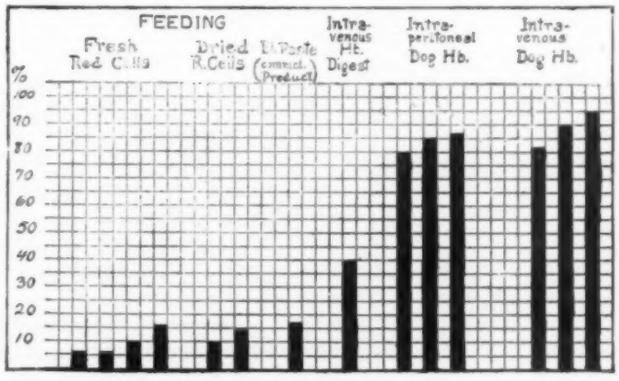
We also recall in the same paper that muscle hemoglobin may be conserved and rebuilt to form blood hemoglobin in severe anemia. In its breakdown within the body, muscle hemoglobin forms bile pigment. Bile pigment given by mouth or intravenously never show any evidence of conservation and reconstruction to form new blood hemoglobin. Bile pigment would seem to be an intermediate that is not reclaimable and never contributes to form new blood hemoglobin.

HUMAN ANEMIAS

Human anemias compared with relatively simple experimental anemias are usually difficult and complex. It is usually very difficult to get a complete analysis of the many factors which may enter into the confused etiology.

Loss of blood by large and small bleedings is usually obvious. There has been a feeling that long continued bleeding was much more serious than large individual hemorrhages. Our experiments do not give support to this hypothesis as our dogs in some instances have been kept continuously anemic at one-third the normal hemoglobin level for about half the usual life cycle of the healthy dog. Bleedings are done at least once a week or oftener during these long intervals, yet these dogs usually react exactly the same in the fourth year of anemia as in the first year. We believe that the long continued bleeding in human beings which gives a stubborn anemia should be carefully reviewed. It is possible that these cases are resistant to iron therapy but would yield to proper diet therapy. Again, it may be that complications are important—for example, faulty routine diet, latent infection and renal injury.

Anemia associated with infection is little understood and calls for much careful study. The low blood hemoglobin is explained usually on the basis of blood destruction (for example, hemolytic cocci); but such hemoglobin destroyed in the blood stream would normally be carefully conserved and promptly available for new hemoglobin construction. The mechanism of hemoglobin production may be disturbed by the infection or we may assume some hypothetic toxin which is held responsible, but this is usually a devious method of concealing ignorance. It will be of much interest to test a variety of diet factors and extracts in these anemias of infections.



Utilization of hemoglobin.

Nephritic anemia is well recognized and should be studied from all points of approach. The fact that in simple anemia we have shown a remarkable potency of kidney feeding may have some significance. The kidney contains substances which are assimilated and readily built into new blood hemoglobin; in fact, kidney diet stands about on a par with liver diet in this respect. This observation may mean that the kidney is concerned in conservation of materials useful to the body for hemoglobin building. The threshold of hemoglobin conservation is set by the kidney and varies with different hemoglobins introduced into the blood stream of the dog. Injury of the kidney (nephritis) may disturb this function and hemoglobin construction may suffer with resultant anemia.

Cancer anemia is usually associated with multiple factors. There may be an infection and more or less loss of blood. In certain cases these complications seem to be excluded and the study of such cases will be of

6. Whipple, G. H.; Robscheit-Robbins, F. S.; Elden, C. A., and Sperry, W. M.: Proc. Soc. Exper. Biol. & Med., to be published.
7. Whipple, G. H., and Robscheit-Robbins, F. S.: Am. J. Physiol. 83: 60 (Dec.) 1927.

extraordinary interest. It is probable that diet therapy has not been given comprehensive tests in many such cases. When one thinks of the rapidly growing tumor cells there remains a possibility that these cells may have first call on building materials from internal metabolism which otherwise would go to form new red cells and hemoglobin. In many cancer cases we observe fever without infection and a rise in urinary nitrogen. This suggests strongly the production of poisons derived as split products from the masses of dead and dying tumor cells in the body. What effect such poisons may have on the hemoglobin-producing mechanism of the body remains in total obscurity.

Anemias are commonly associated with chronic intestinal stricture and a variety of intestinal infections and ulcerations. These anemias are usually complicated with infection and loss of blood. Probably in all instances there is a diet deficiency factor due to faulty intake because of impaired appetite or to faulty assimilation because of local intestinal pathologic conditions. I [8] have discussed the interesting bothriocephalus anemias in another place and believe that these anemias give no support to the toxic theory of pernicious anemia. I believe that the toxic theory of pernicious anemia rather than being a help has done a great deal to confuse the issue.

Dietary anemias are probably much more common than is usually appreciated. Such anemias are not uncommon in children and probably are usually due to an overwhelming preponderance of the dairy products in the diet. A limited diet of milk products will promptly cause anemia in pups and rats, as has been observed by Robscheit-Robbins and Whipple and many other workers. Also in adults a faulty diet is often found to be at the bottom of an obscure anemia. We believe that such cases will become more numerous as clinical attention is focused on this point.

It is becoming increasingly apparent that pernicious anemia belongs in this group of dietary anemias. This view at present is perhaps not generally accepted, but I believe it will be in the near future. From an analysis of the anatomic observations in cases of pernicious anemia I [9] came to the conclusion some years ago that there was some deficiency of stroma-building material or a disturbance of the stroma-building mechanism. It is apparent that there is much excess of pigment material everywhere in the body in pernicious anemia. More pigment than normal is found in the liver and kidney cells, in the blood and body fluids, and in the feces or urine. The muscle hemoglobin is certainly in high concentration and the red cells are saturated with hemoglobin in contrast to a deficiency of red cell hemoglobin in secondary anemia. Our knowledge of pathologic conditions of the red marrow has been greatly enhanced by the accurate observations of Peabody [10] and Doan.[11] The fact that these notable marrow abnormalities clear up promptly on administration of a liver diet is very difficult to correlate with a progressive intoxication and favors the assumption that pernicious anemia is a deficiency disease.

DIET THERAPY

Diet therapy in anemia has aroused much clinical interest and discussion during the past three years. This topic was presented in a symposium at these meetings a year ago by Minot and Murphy, Koessler and Maurer, and Macht.[12] Since that time a large series of papers has appeared but need not be reviewed here. I believe that it is now quite apparent that simple anemia in animals can be controlled at will by diet factors, and the evidence goes to show that simple anemia in human beings can likewise be readily controlled by diet therapy. The anemias complicated by infection, nephritis and tumor growth call for much more study, but all diet factors and favorable inorganic salts should be carefully tested in these complicated human anemias. Various extracts found to be potent in secondary anemia in animals should be carefully tested and the results reviewed with judicious caution. It would seem that the anemias of nephritis should be given more study. The fact that fruits (apricots and peaches) are remarkably potent in experimental anemia would suggest the use of these diet factors in nephritis, in which the protein intake is to be held at a low figure. Testing of kidney feeding and various kidney extracts should give interesting data. With the anemia of cancer I believe diet therapy will give illuminating results. Various extractives of liver and other viscera as well as many inorganic factors must in time be thoroughly tested.

Pernicious anemia is a topic of especial interest, and this may be attributed largely to the contributions of Minot, Murphy and Cohn. They have shown the potency of liver feeding in this disease and have produced an extract which contains the active principles in concentrated form. Through the kindness of Dr. Minot and the Eli Lilly Company we have been furnished liberal amounts of the liver extract to test in our standard anemic dogs. This experimental data will shortly be published by Robscheit-Robbins and Whipple, but I may say here that this extract in severe secondary anemia due to bleeding in dogs does not show much potency. It shows about 10 to 15 per cent of the activity of whole liver in influencing hemoglobin production under the condition of these experiments. It may be of interest to note that the addition of a little accessory feeding of whole liver will apparently raise the potency of this mixture nearly to that of whole liver. For example, whole liver feeding, 400 Gm. daily, in a standard anemic dog will produce from 80 to 100 Gm. of hemoglobin per two weeks period above the control level. Liver extract (Lilly) alone (equivalent to 500 Gm. of liver) under the same conditions will average from 10 to 15 Gm. of hemoglobin per two weeks period. Liver feeding of 50 Gm. daily would average about 5 to 10 Gm. of hemoglobin per two weeks period. The combination of liver extract (Lilly) plus 50 Gm. of liver may raise the hemoglobin output to 80 Gm., or the supplementing of this liver extract with a little whole liver may develop full potency in secondary anemia. This may have some value in the liver extract therapy of secondary anemia. The extract used had been tested by Minot in pernicious anemia and was known to be fully potent in this disease.

This difference is of great interest when compared with the observations of Hart, Steenbock, Waddell and Elvehjem.[13] They studied a secondary anemia of rats caused by a limited milk diet and observed that the liver extract (Lilly) was quite potent under such conditions. The fact that this liver extract is potent in pernicious anemia and likewise in anemia of rats due to dietary

8. Whipple, G. H.: Am. J. M. Sc. **175**: 722, 1928.
9. Whipple, G. H.: Pigment Metabolism and Regeneration of Hemoglobin in the Body, Arch. Int. Med. **29**: 711 (June) 1922.
10. Peabody, F. W.: Am. J. Path. **3**: 179 (May) 1927.
11. Doan, C. A.: J. Exper. Med. **43**: 289 (March) 1926.
12. Minot, G. R., and Murphy, W. M.: A Diet Rich in Liver in the Treatment of Pernicious Anemia, J. A. M. A. **89**: 759 (Sept. 3) 1927. Koessler, K. K., and Maurer, S. M.: Treatment of Pernicious Anemia with a High Caloric Diet, Rich in Vitamins, ibid., p. 768. Macht, D. I.: Pernicious Anemia, ibid., p. 753.
13. Hart, E. B.; Steenbock, Harry; Waddell, J., and Elvehjem, C. A.: J. Biol. Chem. **77**: 797 (May) 1928.

deficiency but not potent in anemia due to loss of blood (dogs) would give more evidence that pernicious anemia is a deficiency disease. The Wisconsin workers are convinced that inorganic elements are of primary importance in this rat nutritional anemia, and copper seems very important. In our experiments with the anemia of hemorrhage in dogs it is becoming clear that iron is more potent than copper but that inorganic factors are important. Sufficient data relating to pernicious anemia are not yet at hand, but suggestive observations by McCann [14] would indicate that inorganic elements are of secondary significance.

I wish to say a word as to the specific nature of this liver substance in anemia. The evidence would seem to point to a group of substances rather than any single substance. There may be organic as well as inorganic materials concerned in this reaction. Further, we should not make the serious blunder of thinking of this unknown substance as being peculiar to the liver. The kidney contains almost as much per gram unit weight. McCann [15] has shown that in pernicious anemia the kidney is almost but not quite as potent as the liver in the diet. Our experiments show that in simple experimental anemia, kidney is almost as potent as liver; also that chicken liver and gizzard are of equivalent potency. It may be worth recording too that liver sausage is potent directly in proportion to the percentage of contained liver. Blood sausage is likewise quite potent.

As a final suggestion we note the propriety of testing thoroughly and incorporating in the dietary of various anemias, including pernicious anemia, the following substances besides liver. These have all been tested in experimental anemia (dogs), and shown to be highly potent: kidney (sheep, calf, pig), chicken liver and gizzard, liver sausage and blood sausage.

SUMMARY

Diet factors have been listed as to their potency to cause new blood hemoglobin regeneration in severe long continued anemia due to bleeding in dogs.

Liver stands at the head of the list. Kidney is very close to liver. Apricots and peaches stand quite high but average only about half the potency of liver in the usual feedings.

Liver extracts have been tested in this experimental anemia and the evidence points to a group of active substances rather than to a single active principle. Kidney and liver extracts of many varieties should be studied in every form of anemia.

Iron may be inactive in some anemias and quite potent in others. The mechanism of this reaction is not simple and it surely is not a mere replacement of the iron built into the hemoglobin molecule.

Inorganic elements are potent in anemia. Some elements are potent in one type and not in another. The ashes of apricots, liver and kidney are potent in secondary anemia due to bleeding.

Conservation of hemoglobin is very important in every type of anemia. In this type of anemia the conservation of injected hemoglobin is very high, about 90 per cent, contrasted with hemoglobin by mouth—about 10 per cent.

Pernicious anemia is a deficiency disease in which there is a deficiency of stroma building material or a disturbance of the stroma building mechanism. The toxic theory has little to support it and has been responsible for much confusion. Studies of pigment abnormalities, pathologic conditions of the marrow and the reaction of the disease to any liver extract all favor the view that pernicious anemia is due to lack of something, rather than to an obscure poison.

It seems scarcely debatable that secondary anemia due to hemorrhage can be controlled best by diet therapy. Pernicious anemia can be controlled by diet. Other anemias should be carefully tested in similar fashion. Especially potent in the anemias tested are liver and kidney, which are about on a parity even in pernicious anemia. Substances very potent in experimental anemia should be tested carefully in various human anemias: kidney (sheep, calf, pig); chicken liver and gizzard; liver sausage and blood sausage.

14. McCann, W. S.: Proc. Soc. Exp. Biol. & Med., to be published.
15. McCann, W. S.: Proc. Soc. Exper. Biol. & Med. **25**: 255 (Jan.) 1928.

LIVER FRACTIONS IN PERNICIOUS ANEMIA*

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Since Minot's [1] demonstration that a diet high in liver is extraordinarily effective in treating pernicious anemia, we have been endeavoring to find whether certain constituents of liver are as effective as whole liver.

We have shown [2] that a 60 per cent alcoholic extract of liver evaporated to dryness and then washed with absolute alcohol and ether is effective in raising the blood count of patients with pernicious anemia in doses of from 10 to 12 Gm. daily, and that ergothioneine and spermine phosphate are not.

The powder derived from the 60 per cent alcohol extraction was dissolved in water and saturated with solid ammonium sulphate. The precipitate proved inactive, but the filtrate, after the excess ammonium sulphate was removed with 60 per cent alcohol, proved active. Doses of 1.6 Gm. daily brought one patient's red cells from 1.4 to 2.7 millions in ten days, the reticulocytes reaching 380,000 per cubic millimeter.[3]

At this point the Pernicious Anemia Commission of Harvard University had the Eli Lilly Company supply us with the commercial extract (343) made by Cohn's method [4] to use for further fractioning.

This extract was dissolved in water and cleared with basic lead acetate.[5] Lead was removed from the filtrate with hydrogen sulphide or with sulphuric acid and sufficient sulphuric acid was added to give 3 per cent by volume. A saturated solution of Kahlbaum's phosphotungstic acid in 3 per cent sulphuric acid was added until no further precipitation occurred. The phosphotungstic precipitate was dissolved and suspended in 75 per cent acetone and decomposed with baryta. The decomposed phosphotungstates in doses of 4.5 Gm. daily brought a patient's red cells from 2.1 to 3 millions in eleven days, with a reticulocyte peak of 360,000 per cubic millimeter.

The decomposed phosphotungstates were next fractioned by Kössel's silver method, silver acetate being used. The two silver precipitates were combined,

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1. Minot, G. R., and Murphy, W. P.: Treatment of Pernicious Anemia by Special Diet, J. A. M. A. **87**: 470 (Aug. 14) 1927.
2. West, Randolph: Proc. Soc. Exper. Biol. & Med. **24**: 665, 1927.
3. Minot, G. R.; Murphy, W. P., and Stetson, R. P.: Am. J. M. Sc. **175**: 581-599 (April) 1928.
4. Cohn, E. J., and others: J. Biol. Chem. **74**: 69, 1927.
5. Cohn, E. J., and others: J. Biol. Chem. **77**: 325, 1928.

decomposed with hydrogen sulphide and fed to one patient without effect for ten days. He later improved promptly on liver.

The silver filtrate after removal of the silver with hydrogen sulphide was reprecipitated with phosphotungstic acid and decomposed as stated. This material in doses of less than 300 mg. daily gave a reticulocyte peak of 140,000 with red cells rising from 1.6 to 1.9 millions in ten days' time. A patient with tropical sprue was fed about 1 Gm. of this fraction daily. The reticulocytes rose to 180,000 per cubic millimeter and the red cells from 3 to 3.5 millions in a week's time.

Attempts to precipitate the active material with mercuric acetate have been followed by very feeble clinical responses in our hands.

We have fed three pure substances, choline with a negative result, and glutathione and ornithine with results which are probably negative.

The best fractions prepared have the following properties: nitrogen, from 12 to 14 per cent; aminonitrogen, 20 per cent of nitrogen, which increases after acid hydrolysis to about 40 per cent; phosphorus, none; sulphur, faintest traces; iron, none found. The analysis for copper is not finished, but there probably is none present. The organic tests gave the following reactions: Buiret, +; Diazo, +; Hopkins-Cole, weak +; naphthol test for arginine, +. Polariscopic readings give a weak levorotation.

[EDITORIAL NOTE.—This paper, together with the papers of Drs. Middleton and Whipple, which precede it, and those of Drs. Ordway and Gorham, Means and Richardson, and Heath, to appear next week, constitutes a symposium on anemia. The discussion will follow the papers to be published in our next issue.]

HEALTH IN INDUSTRY*

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Health is man's greatest asset, especially if his vocation finds expression in the industrial world. No individual can expect to achieve the highest degree of efficiency when handicapped by some physical disability.

Today, health in industry is being dealt with as never before. Not only is it affecting an increasingly larger number of new employees every year, but the constant desire to reduce absenteeism and the hope of maintaining the employee's daily usefulness are developing a better and broader medical service. The health in any industry, excluding occupational diseases, is a good index of the community health. This can be demonstrated by the keeping of a morbidity chart which will show the rise and fall of absenteeism due to illness.

This subject is so vast that, with the exception of a few general remarks, this paper will be limited to my own observation during the past thirteen years.

THE ADVANCE OF INDUSTRIAL HYGIENE

Twenty-five years ago, health was receiving very little attention from the industrial world, but that is no longer true. The health of employees is being dealt with as a most vital factor in efficiency. A great impetus was given to this service during the World War, when production was paramount and funds for the financial backing of such service were easy to obtain. However, the industrial depression that followed in the years 1920 and 1921 curtailed the activity to a certain extent, but the quality of the service was not impaired.[1] In the majority of industries in which medical service had previously been rendered, such service continued on a smaller scale and gradually expanded as the business became more prosperous. This depression released physicians, trained in this work, who obtained similar positions in other industries more productive at that time.

Among the many industries in America that have developed medical service to the highest degree, the iron and steel plants stand first, while the boot and shoe industry has made the least effort to cope with the situation. Since workmen's compensation legislation was a big factor in the establishment of medicine in industry, it naturally follows that the most hazardous industries would have the most elaborate service. More and more the industrial organizations are recognizing the value of this medical service, and where it has been established it is most likely to become more elaborate.

Statistics taken from the "Medical Care of Industrial Workers," published in 1926 by the National Industrial Conference Board of New York, show some interesting figures. The medical care of 1½ million workers was studied in 499 leading industries throughout the United States.

These workers received annually nearly 2 million medical treatments, 85,000 dental treatments and more than 650,000 physical examinations. According to this survey, there are 620 full-time and part-time physicians together with 769 physicians on call. The number of nurses reported in survey 966 shows that there was on an average of one to every 1,300 people. There were also thirteen full-time dentists and seventy-eight part-time dentists, making a total of ninety-one serving these 499 industries. Where good vision is highly essential, some industries employ ophthalmologists. In addition to these, men representing the various specialties and the general practitioners are being constantly consulted. This entire personnel, along with the various public and community agencies, is being used to bring about better health in industry. Recently a very comprehensive survey was made in eight states by this board. It found that more than 2½ million workers in 4,659 companies employing fifty or more people were receiving medical care. Fully equipped hospitals are maintained by 10.9 per cent of these companies.

The foregoing figures, it seems, demonstrate a rapidly spreading desire for better health in industry.

THE CAUSE OF DISABILITY AND ITS REMEDY

Of the many complaints made by employees, it is true that colds, headaches and constipation far exceed all others; but I do not know of any acute or chronic disease, not causing total disability, that is not found in industry.

With the exception of occupational diseases, health problems are more or less similar all over the country. However, immediately after the institution of medical supervision in a plant, the prevalence of some disease may be very striking. This was my experience six years ago, when, on an average, one case of active pulmonary tuberculosis was found every two weeks for a period of eighteen months. These cases were not confined to any one particular department but were scattered throughout all the departments, in which at that time 2,000 people were employed. One of these cases was far advanced and the patient, after being

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Nelson's Medical Service, May, 1926, p. 390.

advised and compelled to quit work, died only three months later in a government sanatorium. Fifty per cent of these patients were persuaded to accept treatment in state or private institutions, while the other 50 per cent chose to remain at home or left town to live with some relative in the country. Four of those sent to the sanatorium returned to the factory after their symptoms were arrested. This was four years ago. Three have continued to enjoy the best of health without further symptoms, while one had a recurrence, went back to the sanatorium a second time, and after a six months' rest returned to work again. At present he is free from active symptoms and weighs 190 pounds (86 Kg.). Recently a third x-ray film was taken of his lungs. A marked improvement was reported as compared with the two preceding pictures taken two and four years previously. It is reasonable to assume that similar tuberculosis situations may exist in other industries elsewhere throughout the country where periodic examination of the employees has not been instituted. Since the end of the first eighteen months of medical supervision, the finding of austere cases has been reduced to one about every three months. Influenza epidemics are always immediately followed by active tuberculosis cases and it is advisable to enlist the services of the various executives in one's plant to cooperate in the detection of those who have a prolonged cough and show evidence of loss of weight.

In addition to tuberculosis, there are many other foci of infections found in workers which cause pain and disease. The two most common sources are the teeth and the tonsils. The former far exceed the latter. Other foci include the sinuses, stomach, duodenum, colon, appendix, gallbladder, hemorrhoids, and the infections resulting from venereal diseases. It has been my observation that the diligent search for and the eradication of these hidden foci constitute the major part of preventive medical work in industry.

Symptomatic treatment without a definite diagnosis does not improve the health of workers. Palliative measures only mask the symptoms, while the cause is still active. Nothing is quite so helpful as the positive laboratory and x-ray observations of these foci coupled with the clinical observations. It is then that some definite action can be taken and eventually absenteeism is reduced. Since about one half of our employees are girls and women, I have found a great deal of salpingitis, which is responsible for nearly all of the major operations on the females. In our particular locality, goiter is prevalent. Seventeen per cent of the girls and women examined have an enlargement of the thyroid gland. A very small percentage of these, however, become toxic and require rest treatment or an operation.

THE PHYSICAL EXAMINATION, THE CHIEF WEAPON AGAINST ILLNESS

The physical examination is the keystone of our whole medical structure. It is the chief weapon of defense in case of illness, in suspected illness or in preventive work. As a matter of fact, the whole category of ill health is found only by the persistent use of the physical examination, supplemented by special examinations whenever indicated. The health status and the results of health hazards in any industry can be determined only by systematic periodic examinations. Lost time in industry due to illness is reduced by its constant and persistent use.

While keeping a morbidity chart for over six years, I have seen the absentee rate due to illness alone gradually reduced from 4.2 per cent to 1.3 per cent by the end of the first three years. With slight fluctuations, this rate has remained the same since then.

THE IMPORTANCE OF DENTISTRY

In a measure, the health in our industry is suffering today because of the dental indifference on the part of the workers and on the part of the management. Several years ago, while associated with Dr. Otto P. Geier at the Cincinnati Milling Machine Company, in Cincinnati, our dentist made a careful observation and found that 45 per cent of the employees had never been in a dental chair. In a service letter on industrial relations published last month by the National Industrial Conference Board, I find that only 1.7 per cent of 4,659 companies in eight states have dental clinics. It is true that ills cannot all be traced to teeth, but one thing is certain: many abscessed teeth are being overlooked.

Many aches and pains are of dental origin. Skillern [2] states that from 20 to 30 per cent of antrum infections originate from infected teeth, while Brophy [3] asserts that his experience warrants him in saying that 75 per cent are due to dental infections.

It is my sincere belief that industry is overlooking a big opportunity to do preventive and curative work when dental x-ray examination is not included as a routine medical service. To derive the best results, this should be done every six months.

There is considerable argument even today about the danger of abscessed teeth, but to me there is no argument. An abscessed tooth can do nothing more than poison the system or be a potential source of future trouble. So important and valuable is the detection of such hidden foci of infection that I would recommend that all industries include dental service and dental x-ray examination in their routine examinations. If physicians who are paying particular attention to the health of the executives will make complete x-ray examinations of the teeth every six months, they will be surprised at the results. Many unexplained symptoms will find their origin in such infections if diligently looked for. Furthermore, the health of valuable executives and employees can be improved and safeguarded by such dental service in conjunction with the periodic examinations.

A PLAN WHEREBY THE PUBLIC COULD PROFIT IN A SIMILAR WAY

To have a health program function for the public as it does for the workers in a well organized industry would require national, state and local organizations. The President of the United States would be responsible for the national health. This responsibility would be delegated down through the states to the various physicians in each community or county. Since the physical examination determines the status of the individual's health, a compulsory examination once a year would meet the requirement as it is met in well organized industries today. All charity work would be done by the local physicians and paid for out of a fund collected by taxation. The observations of each examination would be sent to a central organization for a proper check and follow-up. Who can estimate the value of 110 million of physical examinations being made annually?

2. Skillern, R. H.: The Catarrhal Suppurative Diseases of the Accessory Sinuses of the Nose, Philadelphia, J. B. Lippincott Company, 1920, p. 124.
3. Brophy: Oral Surgery, Philadelphia, P. Blakiston's Son & Company, 1915, p. 483.

In lieu of what might seem a radical program, let me suggest the continuation of a more active educational campaign for better health in schools, industries and homes. The public health agencies and the profession must take the initiative. Every physician should sell the idea of annual examinations to his patients. I feel confident that the public would welcome such a plan.

SUMMARY

Health in industry has been rapidly improving during the past fifteen years.

The last national survey showed that more than 1½ million workers in 499 leading industries were receiving medical attention.

The efficiency of the worker is increased and his lost time due to illness is reduced by the finding and removal of foci of infection.

The best results are accomplished by the proper combination and coordination of the five functions:

1. A company policy which insists on the best health obtainable.
2. Conscientious medical examinations made annually or semiannually.
3. Routine dental examinations which include x-ray films.
4. A constant desire to improve working conditions.
5. A cooperating and insistent group of executives.

Selby Shoe Company.

ABSTRACT OF DISCUSSION

DR. WILLIAM A. SAWYER, Rochester, N. Y.: One of the most encouraging signs in regard to health in industry is the attention being given, on an increasing scale, to the executives and others in supervisory positions. This is vital. We must have more guidance and supervision of those at the top before we can expect any universal application to the rank and file. If we can prove to the controlling head that health supervision has a place and a value in his life, he will soon see to it that its value will be given to others under him. One of the serious problems in modern industry is the time lost from illness. This is in the aggregate about eight times that lost from accidents, and the actual cost in dollars far exceeds that from injuries. The physician in industry, therefore, is continually confronted with the importance of physical fitness and its maintenance. He does much thinking along the lines of health habits, perhaps more than in any other branch of medical practice. Health is not a negative state. Absence from disease is a positive asset, a vivid thing of happiness and efficiency seldom found after middle life, except as the result of daily attention to proper living habits. The prevention of communicable disease is primarily the function of the federal, state and city health departments, and fortunately a very definite reduction has already been effected; indeed, to such an extent that if bacterial disease were the greatest cause of illness, we could anticipate ere long a really healthy population. But there is another group, insidiously and rapidly on the increase, those of conditions known as degenerative disease. These are largely brought on by the lack of application of available knowledge to living habits and the elimination of foci of infection. I do not know whether our present-day rapid pace is compatible with man's best development or not, but the facts are that we all feel its intensity and that men break before their time and spend more days in the repair shop and on the shelf than they should.

DR. V. S. CHENEY, Chicago: The organized medical profession maintains that any physician can competently practice industrial medicine and surgery. Undoubtedly that is the reason we have not progressed a little bit farther than we have. We have been trying to do entirely too much in industrial medicine and hygiene, or the practice of industrial medicine. The burden of maintaining the quality of the product rests on the seller and not on the buyer. When a man sells his services to any industry, it is presupposed that he is mentally and physically qualified to fill the position or job assigned him. The product he is selling contains three things: knowledge, ability and health. Like any other raw product, the industry requires that it meet certain definite specifications. The specifications of knowledge and ability are many and various, depending on the character and the importance of the work, but health has only one specification and that is good; and the quality must always be maintained or the whole product is ineffective and useless. The medical and employment or personnel departments are the laboratories in which we test our employees. We find that few make any consistent effort to maintain the quality of their most important asset. When they fail to come up to specifications, what shall we do with them? Cancel their contract? They know that if the quality of their knowledge and ability is not maintained or increased, they cannot advance. This, however, is easily accomplished if they keep their eyes and ears open, but the maintenance of good health requires hard work and sacrifices which they are loath to make. We place a delicately constructed machine in charge of some employee. He takes greater pride in maintaining that machine than he does in maintaining the machine that God has given to him, and ninety-nine times out of a hundred he takes greater care of that machine than he does of his own machine. There is no royal road to health. If you want health you have to work hard for it, and every day in the year, not just two or three times a week on the golf course. Exercise is just as essential as eating three times a day or sleeping once a day. Might it not be a good plan to make employees realize that their advancement or continuation in their job depends on their good health?

DR. C. L. FERGUSON, Portsmouth, Ohio: The chief weapon we have in diminishing illness, not only in industry but everywhere in the country, is the constant and persistent use of the physical examination.

ROTOGRAVURE INK DERMATITIS*

EDWARD A. OLIVER, M.D.
CHICAGO

Dermatitis venenata, or dermatitis due to contact with some irritating agent, is one of the commonest conditions a dermatologist is called on to treat. The list of agents that may cause such a dermatitis is a very large one. Most of the common ones are well known to all dermatologists. We are constantly adding to our knowledge of the less well known irritants, and in this paper I am reporting a group of cases of dermatitis due to contact with the ink of the rotogravure section of the Sunday newspapers.

At the 1926 annual meeting of the Chicago Dermatological Society, I presented a case of dermatitis due to contact with this type of ink. This, I believe, was the first time rotogravure ink, as used in the newspapers, was proved to be a source of skin irritation. The case was, in a way, amusing and was looked on as sort of a curiosity. It was considered an unusual example of idiosyncrasy.

Since that time my colleagues and myself, much to our surprise, have seen a number of similar cases. In the hope that this paper will serve to aid in the recognition of more cases, I am reporting a group of fifteen instances of this dermatitis, collected from the practices of my colleagues and my own.

REPORT OF CASES

CASE 1.—A man, aged 66, an insurance agent, seen, Jan. 6, 1925, had a severe dermatitis involving the forehead, both upper eyelids and the cheeks. The eruption was of ten days' duration. He had never previously experienced any skin irritation. His general health was excellent.

* Read before the Section on Dermatology and Syphilology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

The affected skin was red, slightly infiltrated, and very pruritic. There was some scaliness on the surface. Both eyelids were swollen from having been rubbed. An external irritant was thought to be the cause of the dermatitis but careful inquiry failed to elicit a clue. The patient had not come in contact, so far as he knew, with anything of an irritating character. There were no plants at home; he had not used any hair lotions, had not worn any new clothes, and had not applied anything of an irritating nature to his face.

Soothing ointments and lotions were prescribed for him, and he used these for several months. They gave him relief but at no time did the dermatitis entirely disappear.

The patient went to California and was gone six weeks. During that time he was slightly better. On his return, he resumed his visits to my office. He was apparently no better than when I had first seen him.

He was sent back to the hospital for observation and examination by a competent internist and, while there, the basal metabolic rate was found to be —20. Thyroid medication was prescribed for him but this aggravated the condition.

When his history was more carefully studied, it was seen that his worst attacks always occurred on Monday and Tuesday. It was evident then that whatever the irritant was he came in contact with it on Sunday. To determine whether it was in his home environment, he was persuaded to go to his office for three successive Sundays. The dermatitis, however, recurred just as before.

When everything else was eliminated, the only difference I could see in his life on Sundays that differed from his daily life was the reading of the Sunday newspaper. This differed from the daily newspaper in that it contained a comic strip and a rotogravure section of pictures. He was advised to stop reading and handling these parts of the paper for the next Sunday. The improvement on Monday was so marked that he discontinued handling these parts for three weeks. The dermatitis immediately cleared up and the skin has remained entirely well.

A year later he was asked again to read and handle the rotogravure section of the paper, for further observation had convinced us that this was the offending part, not the comic strip. A dermatitis immediately developed and the patient was presented before the Chicago Dermatological Society.

CASE 2.—An elderly woman, aged 72, was seen, April 26, 1927, because the skin of her forehead, cheeks and chin was inflamed, dry and pruritic. The picture was that of a dermatitis due to external irritation.

She was questioned carefully about contact with primroses, fur coats, new clothing, hair dyes and the use of strong soaps. She was an intelligent patient and disclaimed knowing of anything that might have caused this irritation. Her attacks were always worse the first part of the week and noting this I advised her to discontinue handling the rotogravure section of the paper. This she stubbornly refused to do because she felt that the cause of her trouble was internal.

The condition cleared up entirely several times only to recur within a few weeks. After discontinuing reading and handling the rotogravure section, the patient has remained entirely free from dermatitis for the past seven months.

A small amount of the dry color used in the manufacture of the ink was rubbed into the skin of the forearm. This was immediately followed by the development of an area of erythematous dermatitis.

CASE 3 (case of Dr. Clark W. Finnerud).—A woman, aged 44, a hair dresser, had redness, swelling, scaling and crusting, diffusely involving the face and neck, which was of several months' duration. She offered the information that it was usually nearly clear by the end of each week but that it became much worse Sunday evenings and Monday mornings. She always read the rotogravure section of the paper on Sunday morning. She stated that she had no hair dyes in her shop but that she used the usual soaps and hair tonics on her customers. She also knew that her fur collar was made of dyed fur, but she had worn this long before the eruption was first noticed.

The dermatitis cleared up rapidly when she avoided the Sunday paper for two months, meanwhile continuing her occupation. She was seen two months after the first visit with a recurrence of the trouble after having been exposed for the first time to the rotogravure section. The patient has avoided this part of the paper ever since and has remained well.

CASE 4 (case of Dr. William A. Rosenberg).—A man, aged 64, a watchmaker, seen, Dec. 1, 1925, gave a history of recurrent attacks of dermatitis of the face, neck and hands of two months' duration. It was noted that his attacks were worse at the beginning of the week and consisted of severe dermatitis of the face, and edema of the eyelids. The affected parts were erythematous, somewhat infiltrated, and covered with scales. He complained of severe itching and burning. The patient was a foreigner and did not read the English language, but he did like to look at the pictures in the Sunday newspapers. An attack could be induced by having the patient handle the rotogravure section of the paper. When he no longer handled this part of the paper, the eruption rapidly cleared up.

CASE 5 (case of Drs. Guy and Jacob).—A man, aged 60, had had recurrent attacks of erythematous dermatitis on the neck and face since 1923, the eruption appearing each time on Monday morning. It was suggested to him that he cease reading and handling the rotogravure section of the Sunday paper. Since he has done that there have not been any recurrences. To determine the association definitely, on one occasion the Sunday paper was handled as usual, with the prompt appearance of the eruption the next morning.

CASE 6 (case of Dr. James H. Mitchell).—N. W., a man, aged 27, presented bright red erythema on the cheeks and about the orbits of one year's duration, which occurred Sunday afternoons about 4 o'clock, after the patient awakened from a nap, and was accompanied by intense itching. The disorder improved during the latter part of the week. He had been treated with quartz light and liquid, which caused considerable burning. The patient never worked on Saturday afternoon or Sunday. He did not use any preparations other than shaving soap on his face. The Sunday paper was read in the morning, after which the patient had luncheon, and then slept until about 4 o'clock. He always undressed and got into bed. There was no contact with colored sofa pillows, blankets or any other possible irritant during the afternoon sleep. Calamine lotion rapidly cleared the eruption, after which application of the rotogravure page of the Sunday paper to a small area of the skin caused an acute erythema.

CASE 7 (case of Dr. James Herbert Mitchell).—A. H., a man, aged 65, was seen with a bright red erythema on the cheeks, nose and about the orbits of two years' duration. The eruption had been continuous, but the patient had noted that it was better at some times than at other times. He had not thought about the possibility of its being worse the first of the week, but on having his attention called to this, he remembered that it was usually worse Sunday night and Monday. The patient did not use applications of any kind, and, as he had a full beard, he did not even use shaving soap. The patient was seen on Monday during an acute attack; he was given calamine lotion, and was not told the nature of the eruption. He was seen the following Thursday, at which time it had practically cleared. He was told to report again on the following Monday, at which time he appeared with a very severe acute erythema. Again he was not told the nature of the eruption, and was allowed to go about his affairs as usual. On the following Thursday, the eruption had practically cleared, but on the following Monday it was as severe as ever. The patient was then instructed to avoid the Saturday evening rotogravure section and that of the Sunday paper. This part of the two papers, including the midweek pictorial section, was removed from any possible contact with the patient. No further trouble has developed. Application of the rotogravure page of the Sunday paper to a small area of the skin caused an acute erythema.

CASE 8 (case of Dr. James Herbert Mitchell).—M. C. C., a woman, aged 60, was seen with a recurring erythema of two years' duration about the upper part of the face and practically throughout the scalp. The patient was not aware of any acute attacks and remissions. She had not, so far as could be ascertained, come in contact with any irritants. She was most concerned about the condition of the scalp. There

was a bright red erythema about the upper part of the face and a diffuse erythema with some serous crusting throughout the scalp. The patient made a practice of putting her comb and brush on the rotogravure section of the Saturday evening and Sunday papers. Being very fond of these sections, she kept them throughout the week, making a practice of putting her comb and brush on one or the other of these sections at night, as she slept in the living room and placed her toilet articles on the living room table. In the morning they were gathered up in the rotogravure section and put away in the drawer. Discontinuance of the contact with the rotogravure section caused the eruptions to disappear spontaneously, and no further trouble was experienced. Application of the rotogravure page of the Sunday paper to a small area of the skin caused an acute erythema.

CASE 9 (case of Dr. Oliver S. Ormsby).—A man, aged 75, had an itching and burning eruption situated on the face, neck and hands, of five weeks' duration. The dermatitis cleared up during the middle of the week but recurred on Sunday night and was much worse on Monday. On the first examination there was diffuse erythema, scaling and crusting dermatitis in the areas noted. Four months after treatment had been instituted and handling of the Sunday newspaper avoided, the dermatitis had not recurred.

CASE 10 (case of Dr. Oliver S. Ormsby).—A woman, aged 50, presented a dermatitis of one year's duration limited to the eyelids, nose and contiguous portions of the face, and characterized by erythema, swelling and scaling. The patient was treated for some time before the discovery of the causative factor. After the Sunday paper was removed from her surroundings, she made a complete recovery.

CASE 11 (case of Dr. Oliver S. Ormsby).—A man, aged 59, had an acute dermatitis of two weeks' duration characterized by redness, swelling, much edema, and burning and itching sensations involving the entire face and lobes of the ears. The dermatitis began Monday morning. The patient was instructed to avoid the paper, and no subsequent attacks occurred.

CASE 12 (case of Dr. Oliver S. Ormsby).—A woman, aged 49, who had had an erythematous disorder over a period of six years, was seen because of an attack of three weeks' duration. There was a definite history in this instance of recurrence and exacerbations on Monday. Avoidance of the Sunday paper was suggested, and no recurrence has taken place in six months.

CASE 13 (case of Dr. Oliver S. Ormsby).—A woman, aged 26, had had dermatitis venenata, probably from rotogravure ink, although this was not definitely proved. The duration of the disorder was two and one-half years. The dermatitis began when the patient came to Chicago. When she went away for a few months the disorder cleared up, but on her return to Chcago after remaining away one month, it recurred. The patient used the usual local treatments and in addition had some nonspecific protein therapy. Exacerbation continued until the Sunday paper was interdicted. Cessation occurred at this time, so it seems probable that the condition was a dermatitis of the type first diagnosed.

CASE 14 (case of Dr. Oliver S. Ormsby).—A man, aged 65, was seen with a disorder of eight weeks' duration, in which the dermatitis began regularly on Sunday and cleared up by the middle of the week. There was erythema and scaling on the eyelids, forehead and cheeks. The patient was seen only twice and on the second visit there had not been any recurrence, as a result of avoiding the use of the Sunday paper.

CASE 15 (case of Dr. Henry L. Huber, from the Epstein Clinic, University of Chicago).—W. M. G., a woman, aged 68, complained of itching, redness, and swelling of the face and neck at periods for six weeks.

Six weeks previously, on Monday morning, she first noticed itching, redness and swelling starting on the right side of the face and gradually involving the whole face and neck, increasing in severity until Tuesday, and then subsiding and disappearing completely by Thursday. Each Sunday evening or Monday morning since, the same trouble had appeared, disappearing again at the end of three or four days. There had not been any change of environment, any exposure to plants, new furniture, new clothing, or animals, or any change in diet. Local applications of sodium bicarbonate, magnesium sulphate, and vinegar, zinc oxide and olive oil had not given any relief. The patient also took calcium lactate and elixir of iron, quinine and strychnine, without relief. She had felt perfectly well in every way except for the itching and swelling on the face.

When the patient was seen, Thursday, January 12, there was no discoloration or scaling of the skin about the face. The anterior cervical glands were slightly enlarged. There were no other physical observations of importance. The blood pressure was 155 systolic and 90 diastolic. Blood examination showed: hemoglobin, 86; red blood cells, 3,530,000; white blood cells, 5,800. The differential count was: neutrophils, 70 per cent; small lymphocytes, 24 per cent; large lymphocytes, 1 per cent; large mononuclears, 5 per cent. The urine contained a trace of albumin.

The patient was advised to follow her usual routine on Sunday, January 15, except to avoid the colored section of the newspaper. She returned to the clinic, January 17, and reported that there had not been any skin trouble. On Sunday, January 22, she handled the colored section of the paper, and within a few hours the skin of the face and neck became itchy and red and a typical dermatitis developed and was still present when the patient was seen, Tuesday, January 24.

Small portions of the colored sections of the Sunday paper were placed against the skin of the back on Sunday and taken off on Tuesday. The skin under the rotogravure portions was erythematous, while that under other parts of the colored section was not affected.

There has not been any recurrence of the dermatitis since, as the patient has not been exposed to the Sunday paper.

COMMENT

A survey of the literature for reported cases of this type of dermatitis failed to disclose any. Printers' ink dermatitis among printers is very common. According to an article in THE JOURNAL[1] in 1921, inquiries made of the larger printing and engraving firms of this country disclose that although neither oil of turpentine nor a substitute is used, the arms and hands of the pressmen develop skin lesions which may vary from slight erythema to ulcerations. Some of the lesions present a dry and scaling appearance while others are moist and vesicular. Some have a tendency to coalesce and spread, others are discrete.

A study to determine the possible relationship of this dermatosis to the use of inks was made by McConnell[2] of the United States Public Health Service in 1901. He found that eleven specimens of printers' ink did not cause any irritation when applied to the unbroken skin, although they seemed to delay healing if applied to cuts and scratches. Brown and green inks had the most pronounced effect; black had the least. He attributes the dermatoses of printers more to the methods used for removal of the ink, especially if the man's skin is dry. If the ink is poor in linseed oil and the skin is poor in natural fats, the irritation will produce a dermatosis, for in that case the skin may be compared to blotting paper readily absorbing the ink. There is then much more difficulty in removing it and the man scrubs vigorously, using sandsoap or pumice on a stiff nail brush, all of which removes the cells of the outer skin, allowing the ink to penetrate still more easily, and finally results in an eczema. He examined thirty-five patients with dermatosis in all of whom the skin was wholly or partially devoid of natural oiliness. McConnell found the lead chromate in all except black ink.

The fact that the inks retard healing after abrasions of the skin indicates the presence of some ingredients,

1. Industrial Dermatoses Among Printers, J. A. M. A. **77**: 1760 (Nov. 26) 1921.
2. McConnell: Pub. Health Rep. **36**: 278, 1901.

perhaps of chromates, which aggravate an otherwise simple dermatosis. There is reason to believe that the drying agents in the inks, such as benzene, may extract the oil from the skin, and if benzene is used also for cleansing purposes, it may cause intensive irritation.

All this, of course, is referable to the ink used in the printer's trade, which is considerably different in composition from rotogravure ink.

PREPARATION OF INK

Rotogravure ink is composed of a varnish and a dry color. The varnish is made by dissolving gilsonite in xylene and naptha. Gilsonite is an asphalt occurring in masses several inches in diameter in the Uinta Valley near Fort Duchesne, Utah. It is black; its fracture is conchoidal, and it has a lustrous surface. When warmed, it becomes plastic and, on further heating, fuses perfectly. Its specific gravity ranges between 1.065 and 1.070, and it dissolves freely in hot oil of turpentine. Dissolved in the naphtha and xylene, it makes a thin, quickly drying ink.

To this varnish the dry color is added. The preparation of dry color, as may be seen from the following description, is somewhat more complicated:

Paranitraniline, a coal tar product, 14 parts, is mixed with 34 cc. of hydrochloric acid and heated. This is iced and sodium nitrite is added. The sodium nitrite redissolves the mixture because, when iced, it splits up into granules. Calcium carbonate is added to neutralize any free hydrochloric acid.

Betanaphthol is dissolved with sodium hydroxide, and then sulphonated castor oil is added. This is cooled down to 32 F. and this mixture is added to the paranitraniline. An oxidizing agent is then added, and the solution is filtered and all free salts are washed out.

The finished product is a fine powder of a coppery brown color.

CUTANEOUS TESTS

In most of these cases small pieces of the rotogravure section of the Sunday newspaper were applied to the skin of the back for twenty-four hours. In each patient so tested, there appeared an erythematous area under the piece of paper.

To determine the etiologic factor in the ink, my first patient volunteered to allow me to test the ingredients on his skin. Xylene, naphtha and the dry color were thoroughly rubbed into the unbroken skin. The areas to which xylene and naphtha were applied were unaffected, but a definite dermatitis developed on the areas to which the dry color was added. Two areas were chosen for the application of the dry color, a small one in the right temporal region and a larger one on the left forearm. Within twenty-four hours a well defined dermatitis occurred in both areas, which increased in severity in the next twenty-four hours. The area on the temporal region was erythematous and pruritic, and both eyes were irritated. The area on the forearm was the seat of an erythematous dermatitis which, under the application of soothing ointments, was present for ten days before the skin resumed its normal condition.

At the same time I had rubbed xylene, naphtha and the dry color into my own arm without producing any effect on the skin.

During a visit to the newspaper plant and ink manufacturing department, careful inquiry of the employees failed to disclose a single case of dermatitis among them.

How is this dermatitis produced? In susceptible persons it is probable that some of the dry color adheres to the fingers while the patient is reading the paper and from them is transferred to the face. In none of my cases were the hands affected.

This dry color is paranitraniline red, commonly called para red, a diazo dye, very extensively used in color printing. The production of the brown color is a secret formula, but it is due to the addition of two nonirritating chemicals which oxidize it.

Its active ingredients are paranitraniline, sodium hydroxide and betanaphthol.

Paranitraniline is a benzene ring[1] derivative. Its formula is $C_6H_4NH_2NO_2$.

Paraphenylendiamine, of whose irritating properties we are all aware, is $C_6H_4(NH_2)_2$.

Paranitraniline is very irritating to the skin. Alice Hamilton[3] says,

> Its most conspicuous action is on the skin, for it causes a very distressing, burning, itching eruption but it is also capable of producing serious and even fatal systemic poisoning. In the making of dye intermediates and coal tar dyes, in the preparation and handling of such substances as paranitraniline and dinitrochlorbenzol, white men suffer from such distressing dermatoses that only negroes, whose skin is resistant to these drugs, are employed.

She also says that the use of betanaphthol in industry in making para reds seems to give rise to little if any trouble except for its effect on the skin. Even the fumes are said to be irritating, but the sodium hydroxide used in producing betanaphthol is much worse in this respect than the betanaphthol itself.

Prosser White[4] says that men occupied in converting betanaphthol into para red suffer from swelling of the eyelids and mucous membrane of the nose.

It is apparent, then, that this dermatitis is produced by para red, a diazo dye, all of whose ingredients have been shown to be active skin irritants.

SUMMARY

In the fifteen cases of rotogravure ink dermatitis here reported, the condition was characterized by an acute inflammation of the skin of the face, and occasionally of the neck, and swelling of the eyelids; in most cases it was productive of considerable pruritus. In one case it was seen on the scalp.

Its worst periods always occurred early in the week, generally on Monday and Tuesday, although the irritation was always present until the offending agent was removed.

The dry color used in the ink, para red, is undoubtedly the irritating agent.

55 East Washington Street.

ABSTRACT OF DISCUSSION

DR. CLARK W. FINNERUD, Chicago: Since learning of this source of irritation in dermatitis venenata, through Dr. Oliver's original observation a couple of years ago, I have seen the disease with considerable frequency, at least in the Chicago vicinity. This interesting cause of the disorder has probably been responsible for many cases of dermatitis venenata of undetermined origin there and elsewhere. It is probable that the newspapers in the vicinity of Chicago that have rotogravure sections are not the only ones in this country which employ these irritating dyes in their inks and that this will soon become more generally recognized as rather a common cause of dermatitis venenata. I have been impressed by the fact that the patients with this disorder may be of little assistance in the

3. Hamilton, Alice: Industrial Poisons in the United States, New York, MacMillan Company, 1925, pp. 6, 501, 480.
4. White, Prosser: Occupational Affections of the Skin, New York, Paul B. Hoeber, 1920.

working out of the etiology. If the physician is not familiar with this fact, and if he is not on the lookout for this source of irritation, he will not be likely to determine the etiologic agent. Careful history taking is essential. In many of the instances, on first questioning, the patients were unable to associate the time of appearance of the eruption with any particular time of the week, but if they were compelled to figure back carefully, they usually determined that the attack began on Sunday afternoon or evening, or during Sunday night. In the same way, they can by careful examination be helped to figure back as far as the last previous attack, finally concluding that it began at the same relative time. This contribution should help to explain many of the baffling cases of dermatitis venenata.

DR. JAMES HERBERT MITCHELL, Chicago: I wish to call attention to the danger of attaching too much importance to the time of onset of the acute symptoms. Dr. MacKee says that these cases occur in large numbers in New York. Recently I saw a case which I suspected at once of being an ink dermatitis, but there was no weekly periodicity, and on going over the history I found that the patient made a practice of getting the New York *Sunday Times*, usually reading this on Monday or Tuesday. She was also fond of the *Midweek Pictorial*, which she usually read on Wednesday or Thursday, and she always looked at the Chicago *Daily News*, which has a rotogravure section on Saturday. Obviously in such a case it would be impossible to correlate the symptoms with a weekly periodicity. The only way we can diagnose such cases is to eliminate very carefully the various factors and then test the reaction of the skin to the paper.

DR. FRANCIS J. EICHENLAUB, Washington, D. C.: The one case I have seen in Washington that was due to this cause involved the hands and forearms to the elbows.

DR. WILLIAM ALLEN PUSEY, Chicago: I was struck by the completeness with which Dr. Oliver has studied this disease, but I have admired more the cleverness with which he found the cause in his first case. My only regret is that with the prevalence of crime we have, Dr. Oliver is not in the detective bureau of the Chicago Police Department. In regard to the occurrence of the disorder in other parts of the body, of course one can readily realize why this may occur, and one can imagine many places to which the rotogravure section might be applied. Dr. Oliver has done good work in giving us this study.

DR. GEORGE M. MACKEE, New York: I have encountered quite a large number of cases of dermatitis venenata which were unquestionably caused by the handling of Sunday newspapers, probably the rotogravure sections. Curiously, all my patients read the same paper, but this was probably a coincidence, because cases are being reported from various sections of the country, caused by different papers. I sent one of my associates to the office of the newspaper and while their experts ridiculed the idea that a newspaper can cause a dermatitis; they were very courteous and were willing to help in every way. The physician at the newspaper office averred that he had not encountered any cases of dermatitis venenata. I have not had the opportunity, as has Dr. Oliver, to make allergic tests, but his work, coupled with the increasing number of reported cases, plus my own clinical experience, makes it seem certain that some substance in the Sunday newspapers is capable of causing a dermatitis in susceptible persons. I emphasize what Dr. Mitchell said relative to not being misled by the time of incidence. Many persons read the Sunday newspapers on Sunday or on week days or both. Therefore the eruption may be more or less continuous or it may occur only on a week day, or only on a Sunday or Monday. Also it is advisable not to be misled by the distribution and predilection. The eruption may occur on one or both hands, on the forearms or on the face, or several parts may be involved, and it may even occur on other parts of the body. Of course, the typical picture is that of an acute dermatitis occurring on the face and forearms, Sunday night or Monday morning.

DR. JOHN P. HENRY, Memphis, Tenn.: I am interested primarily in allergy and I think that it will be of interest to this section to know that a case of asthma due to this substance in rotogravure ink has been reported in New York. I understand that an extract of the Sunday paper was made and a positive skin test obtained.

DR. EDWARD A. OLIVER, Chicago: In answer to Dr. MacKee, all of the cases in Chicago have resulted from the reading of the same newspaper. The owners of the paper have given me the heartiest cooperation in my attempts to discover the irritating factor in the ink. In the hope that cutting down the amount of dry color would stop the production of this dermatitis, a reduction has been made from 300 pounds to the ton to 100 pounds. A small number of our patients had the eruption on the hands; one of Dr. Ormsby's patients had it on the hands and face and one of Dr. Mitchell's patients had it on the scalp. I was unable to discover any instances of dermatitis in workmen at the plant engaged in the manufacture of para red.

DISEASES OF CHILDREN BENEFITED BY SPLENECTOMY*

ROGER L. J. KENNEDY, M.D.
ROCHESTER, MINN.

The etiology of many diseases of children which are benefited by splenectomy is still obscure, but methods of diagnosis and treatment are well known. In some, such as hemolytic icterus, the diagnosis is comparatively simple and the results of treatment are good. In others there is doubt with regard to the exact classification, thus rendering it difficult to decide on the propriety of splenectomy. Giffin [1] recently reported the results of splenectomy and summarized the experience of the Mayo Clinic in the general problem.

This report deals with the diagnosis, results of treatment and pathology of the spleen in a group of children observed at the Mayo Clinic since 1920.

Splenectomy was advised for thirty-six children aged less than 15, and the operation was performed on all but one. The preoperative diagnoses in this group were hemolytic icterus in eighteen cases, hemorrhagic disease in ten cases, and splenic anemia in seven cases; it was not determined in one case.

HEMOLYTIC ICTERUS

The eighteen cases of hemolytic icterus presented, for the most part, the usual history, and clinical and laboratory data characteristic of the disease. In all but three cases the disease had occurred in other members of the family, although in two of these the history dated from early childhood, and hence the disease was thought to be congenital. The chief complaints were, in general, weakness, pallor, jaundice, a mass in the left side of the abdomen, recurring attacks of fever, weakness, increased jaundice, and gastro-intestinal disturbances. It is noteworthy that in cases 7 and 9 (table 1) the presenting complaint was pain, in one instance in the back, and in the other in the right upper quadrant. In both cases gallstones causing obstruction of the cystic duct were found at operation.

General examinations showed that the children were in states of good nutrition, although pallor, jaundice and enlargement of the spleen were present in almost all of the cases. Other observers have commented on the fact that such patients are usually well nourished and, except during the periods of increased activity of the disease, which have been referred to as crises, are comfortable and able to pursue most of the activities of childhood.

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* From the Section on Pediatrics, Mayo Clinic.
* Read before the Section on Diseases of Children at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

1. Giffin, H. Z.: Splenectomy, Surg. Gynec. Obst. **45**: 577-585 (Nov.) 1927.

Although the erythrocytes in other diseases may occasionally show increased fragility when tested by hypotonic sodium chloride solutions, hemolytic icterus is the only disease in which the increase of fragility is so constant. The test constitutes the most useful laboratory procedure in these cases and in all the cases in this group served to confirm the diagnosis. Other abnormal manifestations return to normal following splenectomy, but the fragility of the erythrocytes becomes normal only after a long period, as a rule several years. In this group, the fragility following operation showed a continued increase in every instance.

TABLE 1.—*Hemolytic Icterus*

Case	Age	Sex*	Chief Symptoms	Duration	Family History	Reticulated Erythrocytes, per Cent	Increased Fragility of Erythrocytes: Before Operation	Increased Fragility of Erythrocytes: After Operation	Date of Splenectomy	Condition of Spleen	Comment
1	9	♂	Pallor, weakness, splenomegaly; crises	9 years	+	15.0	+	+	7/20/23	Six times normal size; dark; congested; increase of pigment and fibrosis	Good health
2	4	♀	Pallor, weakness, jaundice	4 months	+	15.0	+	+	8/ 3/26	Six times normal size; dark; congested; increase of pigment and fibrosis	Good health
3	2.5	♀	Splenomegaly, weakness	2 years	+	12.2	+	..	5/23/27	Five times normal size; very dark	Good health
4	4.5	♂	Weakness, pallor, splenomegaly; crises	4 years	+	20.4	+	..	1/14/26	280 Gm.; almost black	Good health
5	4	♂	Pallor, weakness	2 months	+	32.2	+	..	8/14/26	Ten times normal size; dark	8/12/27, nephrosis; recovery; good health
6	7	♂	Splenomegaly; crises, jaundice, pallor	5.5 years	+	13.3	+	..	.....	.....	Operation postponed
7	8	♀	Backache, jaundice ...	2 months	—	....	+	..	12/ 4/20	Three times normal size; dark; congested and fibrotic; disease of gallbladder; stones; cystic duct obstruction	1/23/21, death from cerebrospinal meningitis
8	14	♀	Pain left upper quadrant; crises	7 years	+ ?	9.3	+	..	3/23/23	Six times normal size; congested; chronic splenitis	Good health
9	7	♀	Jaundice, pain right upper quadrant; crises	6.5 years	—	26.8	+	+	6/ 7/23	Typical black; 300 Gm.; gallstones; obstruction of the cystic duct	Good health
10	2.5	♀	Pallor, jaundice, crises	2 years	+	....	+	..	4/13/23	400 Gm.; typical blood destroying type	Good health
11	5.5	♀	Jaundice; crises	5 years	+ ?	5.6	+	+	3/12/25	Six times normal size; adherent; typical color	Good health
12	7	♂	Weakness, jaundice splenomegaly; crises	1 month	+	5.4	+	+	7/11/25	Six times normal size	Good health
13	14	♂	Splenomegaly, jaundice	10-12 years	+	8.5	+	+	2/25/26	Six times normal size; firm, dark red; decrease in malpighian bodies; mild splenitis	Good health
14	10	♀	Splenomegaly, weakness	4 years	—	....	+	+	8/17/26	Eight times normal size	Good health
15	6	♀	Pallor, weakness, splenomegaly	6 years	+	21.3	+	..	5/26/26	.....	Good health
16	8.5	♀	Weakness, splenomegaly; crises, jaundice	8.5 years	+	4.4	+	+	9/ 6/27	800 Gm.; chronic splenitis; perisplenitis; infarction of more than half; hemorrhages throughout remaining pulp	Good health
17	8	♀	Weakness, jaundice, splenomegaly	3 years	+	....	+	..	4/16/28	400 Gm.	Good health
18	6	♀	Pallor, splenomegaly; pain left upper quadrant	2 weeks	+	13.0	+	..	1/15/28	500 Gm.; chronic splenitis; congestion; hyalinization of trabeculae; periarteritis and phlebitis	Good health

* In the tables, ♂ indicates male; ♀, female.

The patients recovered uneventfully from splenectomy and, with the exception of one who died later, are living and well (table 1).

HEMORRHAGIC DISEASES

The ten cases of purpura (table 2) presented many complicated problems, in regard both to classification and to the advisability of splenectomy. Although, as a working basis, the subclassification of thrombopenic and nonthrombopenic, and the further classification of acute, chronic, primary and secondary is accepted, such cases must still be considered from the standpoint of the factors which, on the one hand, are producing symptoms and loss of blood and, on the other hand, are at work in the process of regeneration. Unfortunately, certain criteria for classifying certain hemorrhagic diseases are absent, so that it becomes difficult to decide which patients shall be treated by splenectomy.

In hemorrhagic diseases, focal infection is significant. The history of the case may often lead directly to the opinion that the condition is secondary to infection, but in some cases such history is lacking. If foci exist, they are promptly removed. In cases of children this usually includes removal of tonsils, tonsil tags, excessive adenoid tissue or infected teeth. Even in cases in which splenectomy is performed, removal of all foci is carried out before or after the major surgical procedure. Transfusion, of course, constitutes the most important supportive measure at all times.

Splenectomy was performed on ten children because of purpuric manifestations. Seven of these (cases 19 to 25), suffered from the thrombopenic type of purpura. They recovered uneventfully and are in excellent health. One patient (case 26) presented the usual picture of purpura hemorrhagica except that the platelet count was consistently high, ranging from 130,000 to 240,000

before operation and from 130,000 to 208,000 after operation. Recovery was uneventful. This case is probably an example of the nonthrombopenic type of purpura and brings up the question of the importance of the platelet count in diagnosis. The reason for the occurrence of purpura with and without thrombopenia is not known. That it occurs under both circumstances would indicate that a decrease in the number of platelets is not the primary cause of the purpura and that, if the platelets are connected with the essential disturbance of coagulation, the connection must be in relation to a change in the characteristics of the platelets peared. Since the establishment of menstruation in September, 1927, however, menstrual periods have been accompanied by an alarmingly profuse menorrhagia, but the patient is not incapacitated to the extent of being kept out of school. It is possible that this menorrhagia is due to some local condition, such as fibromyomas; such a condition was found in a similar case.

In case 28 of the group there was a short history, prolongation of both coagulation and bleeding time, decreased number of platelets, and high-grade anemia. Transfusions did not induce improvement and splenectomy was performed. Six weeks later tonsillectomy

TABLE 2.—*Hemorrhagic Diseases*

				Before Operation		After Operation		Retractility of Clot		Platelets				
Case	Age and Sex	Chief Symptoms	Duration	Coagulation Time, Min.	Bleeding Time, Min.	Coagulation Time, Min.	Bleeding Time, Min.	Before Operation	After Operation	Before Operation	After Operation	Date of Splenectomy	Condition of Spleen	Comment
19	11 ♀	Ecchymosis, epistaxis	5 yr.	14	60	5	5	None in 6 hours	None in 2 hours	46,000	430,000 50,000	3/19/24	Splenitis, increased leukocytes, hyalinized blood in malpighian corpuscles	Slight epistaxis; acute cold six weeks after operation; condition good
20	11 ♀	Epistaxis, bleeding gums, petechiae, melena	5.5 yr.	7	11	6	3	None in 3 hours	20 minutes	98,000	640,000 296,000	10/10/24	Two times normal size	Condition excellent; no recurrence
21	6 ♀	Ecchymosis, epistaxis, melena, hematuria	3 wk.	30	90	4	3	2 hours	45 minutes	44,000	316,000 280,000	10/27/25	Normal appearance; barely palpable	Condition excellent
22	10 ♂	Epistaxis, ecchymosis bleeding gums	8 mo.	9	60+	..	..	None in 6 hours	.....	56,000	372,000	8/28/26	Firm, light red, few small hemorrhages; slight increase, fibrous tissue; marked dilatation of sinuses; early Banti's disease	Condition excellent
23	9 ♂	Epistaxis, ecchymosis, bleeding gums	3 yr.	9	18	..	..	.....	.....	36,000	.....	5/—/26	Removed elsewhere; barely palpable	Condition excellent
24	4.5 ♂	Epistaxis, ecchymosis, melena	7 wk.	14	48	..	..	None in 18 hours	.....	50,000	368,000 120,000	2/ 2/28	Typical blood destroying type, not palpable	No recurrence
25	8.5 ♀	Epistaxis, ecchymosis, 2 convulsions	4 mo.	7	20	..	2	None in 2 hours	Complete in 2 hours	64,000	224,000 258,000	12/16/26	130 Gm.	No recurrence
26	7 ♀	Ecchymosis, bleeding gums	2 yr.	12	28	7	28	None in 2 hours	None in 6 hours	144,000	242,000 208,000	11/ 2/26	Firm, pink, numerous malpighian bodies; chronic splenitis	Condition excellent
27	9 ♀	Epistaxis, ecchymosis	7.5 yr.	5	60+	7	120+	12 hours	24 hours	300,000	352,000 272,000	8/23/24	Slight increase in fibrous tissue; cellular débris; marked hemorrhage from operative wound	Severe hemorrhage from dental extraction; platelets and retractility unchanged; extreme menorrhagia; unclassified hemorrhagic diathesis
28	4 ♀	Ecchymosis, petechiae, gingivitis	1 wk.	11	26	30	13	.....	.....	98,000	208,000 88,000	6/25/25	Dark blood-destroying type; barely palpable	Not improved; tonsillectomy 2 months later; continued hemorrhage; death 1 week later; necropsy; multiple cutaneous and visceral hemorrhages and anemia; bone marrow of the femur was aplastic, a pale yellow

as well as in their number. Methods of study which would permit recognition of qualitative as well as quantitative variations would be helpful.

Case 27, included in this group, was reported previously by Giffin,[2] who regarded it as an unusual type of hemorrhagic disease, although partaking of the characteristics of hemophilia, hemorrhagic purpura and aplastic anemia. The number of platelets on repeated counts was normal or elevated. Here again arises the question as to whether this is a case of nonthrombopenic purpura, although the early onset, at the age of 14 months, and the profuse bleeding from the operative wound, are against the diagnosis of purpura. Subsequent to operation the epistaxis and purpura disappeared. Since the establishment of menstruation in September, 1927, however, menstrual periods have been accompanied by an alarmingly profuse menorrhagia, but the patient is not incapacitated to the extent of being kept out of school. It is possible that this menorrhagia is due to some local condition, such as fibromyomas; such a condition was found in a similar case.

In case 28 of the group there was a short history, prolongation of both coagulation and bleeding time, decreased number of platelets, and high-grade anemia. Transfusions did not induce improvement and splenectomy was performed. Six weeks later tonsillectomy was performed. Excessive hemorrhage followed which was controlled by sutures. Death occurred a week later. Necropsy disclosed aplastic bone marrow, and the case was accordingly classified as aplastic anemia. Clinically, the chief factor against such a diagnosis was the relative leukocytosis indicating that production of the granular cells of the myelocytic line was not reduced in proportion to the reduction in the number of erythrocytes.

The case of a boy, aged 13, was recently referred to the Mayo Clinic with the diagnosis of purpura. The outstanding symptoms were marked anemia, ecchymosis, petechiae, and bleeding gums. He was observed over a period of three and a half months, during which many transfusions were given. He showed marked anemia, leukopenia and relative lymphocytosis. There

2. Giffin, H. Z.: Unusual Types of Hemorrhagic Disease, Am. J. M. Sc. **175**: 44-49 (Jan.) 1928.

was little, if any, evidence of blood regeneration, as indicated by the absence of normoblasts and reticulated erythrocytes in the circulating blood. At necropsy the bone marrow was extremely yellow. This case is analogous in all respects to case 28, with the exception that there was relative lymphocytosis instead of relative leukocytosis. The patient was referred primarily for splenectomy, but because of the aplastic anemia it was not performed.

SPLENIC ANEMIA

Of the conditions accompanied by splenomegaly in children, none is more difficult to classify than the combination of large spleen and anemia. Anemia is very common in infancy and childhood, and whatever the cause it may be accompanied by an enlarged spleen. Hence, many children with secondary anemia and enlarged spleen are said to have splenic anemia when the real condition is obscure.

In a consideration, therefore, of cases in which benefit may be derived from splenectomy, it becomes necessary to rule out conditions that may simulate splenic anemia and to refer for surgical procedure only those cases in which persistent anemia, leukopenia and a markedly enlarged spleen are manifested. Even in such cases there may be some in which the diagnosis of splenic anemia will remain doubtful, even after operation. Classification of cases of this type into von Jaksch's disease, Gaucher's disease, Banti's disease and splenic anemia is not satisfactory and is in need of revision so as to cover the intermediate cases or those which represent a transition from one type to another.

Splenectomy was performed on seven children (table 3) ranging in age from 6 months to 10 years, after a tentative diagnosis of splenic anemia. The condition found at operation of five apparently agreed with the diagnosis. During convalescence in one case pneumonia developed, in one case a septic temperature persisted for several days, and in one in which melena had occurred previous to operation, transfusions were necessary because of hemorrhage from the wound and recurrence of melena. All of the patients recovered but three have since died, one from lobar pneumonia, one from "summer diarrhea" and one from an overwhelming general infection.

Case 35 was that of a boy, aged 5½ years, who had had colitis at the age of 17 months, after which gastric hemorrhage had occurred. A large spleen had been noted at the age of 18 months. On admission there was anemia and leukopenia, and the spleen extended to the umbilicus. Coagulation time and bleeding time were normal. Transfusions were not beneficial. At operation the spleen was found to be twice normal size, completely encapsulated by adhesions, and extensively adherent to the diaphragm and the abdominal wall. The liver and the appendix were apparently similarly affected. The condition was thought to be chronic and infectious; the spleen was not removed because of technical difficulties; the appendix was removed with difficulty. Two days later hemoptysis occurred, but following this recovery was uneventful. The child is well, three years after operation. The case was classified as chronic infectious splenitis.

One case in which operation was performed and the diagnosis deferred was that of a boy, aged 4 years, who was brought to the clinic because of attacks of irregular fever and anemia of several months' duration. At the age of 9 months, anemia had developed. Von Jaksch's disease was diagnosed and several intraperitoneal transfusions were given. At that time the spleen was very large. The child was well until about eight months before admission, when he had become anemic and began to have attacks of fever.

Examination was negative except for pallor and enlargement of the liver and spleen. The hemoglobin was 48 per cent. Erythrocytes numbered 3,800,000 and the leukocytes 15,700. The differential count and the

TABLE 3.—*Splenic Anemia*

				Before Operation			After Operation					
Case	Age and Sex	Chief Symptoms	Duration	Hemoglobin, per Cent	Erythrocytes, Millions	Leukocytes, Thousands	Hemoglobin, per Cent	Erythrocytes, Millions	Leukocytes, Thousands	Date of Splenectomy	Condition of Spleen	Comment
29	4 ♀	Pallor; weakness	3 months	18	0.88	2.60	76	3.45	6.50	6/18/25	At umbilicus; firm; smooth; ten times normal size	Uneventful recovery; died 1 month later of summer diarrhea
30	8 ♂	Splenomegaly; abdominal discomfort	1 week	75	4.9	2.70	69	4.60	9.90	9/28/23	At umbilicus; large; firm; chronic hemorrhagic splenitis; pulp practically destroyed and replaced by fibrous tissue	Condition good
31	10 ♀	Splenomegaly; pallor	5 years	54	3.77	2.50	..	....	....	5/ 2/22	At crest of ilium; smooth; firm; movable; four times normal size; small hemorrhagic areas throughout; diffuse fibrosis; chronic splenitis	6/20/23, death from lobar pneumonia
32	5 ♀	Splenomegaly; weakness	4 months	62	3.50	2.90	76	6.21	9.80	7/27/22	At umbilicus; 155 Gm.; firm; dark red; congested; considerable blood pigment; slight fibrosis; mild splenitis	Condition good
33	0.5 ♂	Pallor; malnutrition	3 months	28	1.77	4.90	67	4.07	8.00	10/13/21	4 cm. below costal margin; five to six times normal size; firm; dark red; congested; malpighian bodies practically all intact	11/19/21, died after a few hours' illness, septicemia ?
34	6.5 ♀	Melena; splenomegaly	2.75 years	36	2.91	2.70	38	2.89	15.00	9/ 8/27	At umbilicus; 600 Gm.; adherent posteriorly	Condition fair
35	5.5 ♂	Splenomegaly; anemia; hematemesis	4 years	48	3.52	2.00	34	3.40	3.13	12/ 3/25	At umbilicus; chronic infectious splenitis, secondary to colitis at the age of 17 months	Condition good

coagulation and bleeding time were normal. The blood smear on one occasion showed one eosinophilic myelocyte and possibly another young cell. Repeated cultures of the blood were negative.

Six weeks after admission, fluid formed in the abdomen rapidly. The abdomen was explored. The spleen was found to be ten times normal size and widely adherent. There was a plastic exudate about the liver and spleen, as though infection were present. The liver was slightly adherent to the abdominal wall, and showed slight but definite cirrhosis. A large amount of clear ascitic fluid was removed. The bladder, the promontory of the sacrum and the pelvic sigmoid were adherent. The presence of a tumor was suspected because of a mass on the anterior wall of the sacrum, but the suspicion was not confirmed. The postoperative course was accompanied by occasional enlargement of the axillary lymph nodes, particularly on the left side. There was daily elevation of temperature to 101 for a few days. Subsequent treatment consisted of quartz lamp rays and cod liver oil. Examinations of the blood showed a gradual decrease in the anemia. On account of a recent infection of the throat, the tonsils were removed. The final diagnosis was chronic infectious splenitis.

The results of operation in this case were apparently satisfactory, although in retrospect the diagnosis may still be open to question. Chiefly because of the subsidence of symptoms, the condition was thought to be another instance of chronic infectious splenitis. The slight degree of cirrhosis and the ascites indicate the possibility of splenic anemia of the Banti type; the leukocytosis and fever, however, are much against this view. Even though the diagnosis of chronic infectious splenitis is tenable, the case elucidates the fact that cirrhosis of the liver, secondary to enlargement of the spleen, whether it is from Banti's disease or from inflammatory or fibrotic change in the spleen, may be checked or even improved if splenectomy is performed before the changes in the liver become too far advanced.

PATHOLOGY

Usually the histologic diagnosis of material removed at operation agrees with the diagnosis made by the surgeon; in other cases, if the surgeon is in doubt, the histologic examination establishes the diagnosis. The histopathologic diagnosis of splenic tissue removed at operation is very difficult. Specific lesions are not found on pathologic examination. A thorough analysis of the data in the examinations of tissues of excised spleens and a check of these data with the clinical and surgical data, as carried out recently by MacCarty,[3] led to the conclusion that "there seems to be no way of recognizing the clinical entity from the splenic condition alone, except in extremes of myelogenous leukemia and in different types of splenomegaly which belong to either splenic anemia or hepatic cirrhosis."

SUMMARY

It is desirable to check the diagnostic methods and results of treatment of diseases in children for which splenectomy is performed.

Splenectomy was performed for hemolytic icterus on seventeen children. All recovered from the operation. One died later from other causes. The test of the fragility of the erythrocytes is the most useful single diagnostic criterion for hemolytic icterus. It was increased in all cases and did not return to normal following splenectomy.

Splenectomy was performed on ten children because of purpuric manifestations. All recovered from the operation. One died from hemorrhage following tonsillectomy six weeks later. One patient showed a normal platelet count, one showed the characteristics of hemophilia, hemorrhagic purpura and aplastic anemia, and one, who died following tonsillectomy six weeks after operation, was found to have had aplastic anemia. There is still considerable doubt as to the exact significance of the platelet count in diagnosis.

Splenectomy was performed on seven children for splenic anemia. All recovered from the operation but three died later from other causes. At one operation a chronic inflammatory condition was found and was classified as chronic infectious splenitis.

The diagnosis of splenic anemia covers a heterogeneous group of conditions in which anemia, leukopenia and splenomegaly are present. It is highly desirable that better criteria be established for classification.

A case with puzzling features was found to be chronic infectious splenitis with secondary cirrhosis of the liver.

It is probable that early splenectomy in certain conditions will prevent progress, and in some cases will result in a decrease of secondary hepatic cirrhosis.

The microscopic changes in these spleens are not characteristic of the diseases.

3. MacCarty, W. C.: Chronic Splenomegaly, Arch. Int. Med. **41**: 536-548 (April) 1928.

ABSTRACT OF DISCUSSION

Dr. Rood Taylor, Minneapolis: I have had a rather interesting experience with hemolytic icterus. I think a case which I saw three or four years ago was the first one in which both the mother and the patient herself had had splenectomy done for hemolytic icterus. Then in the last year, with the assistance of Dr. Margaret Smith, I have made parallel fragility tests and estimations of the bilirubin in the blood serums of all babies born in the Northwestern Hospital. Among these children there was one who had a definite jaundice and who died in what seemed to be a crisis in the third week of its life. Although it was not known that any other members of the family had jaundice, when we came to estimate the bilirubin in the blood serum of the relatives, we found that the father and the paternal grandmother both had an increased amount of bilirubin in the blood serum, although neither showed any increased fragility of the red blood corpuscles. The father, however, did give a history of recurrent attacks of jaundice. This case, it seems to me indicates that in endeavoring to make the diagnosis of familial jaundice, the determination of the bile index—that is, the determination of the amount of bilirubin in the blood serum—will at times be of more value than a determination of the fragility of the red blood cells.

Research and Practice. — The doctor differs from most other craftsmen because he is expected to discover the scientific laws underlying his craft as well as to apply them in practice. Discoveries in the science as well as in the art of medicine are commonly made by men who have been trained for the practical craft of medicine. There have been conspicuous exceptions, notably Christopher Wren, who, becoming interested in medical problems through his connection with the Royal Society, made the first intravenous injections of drugs in animals for the purpose of observing their effects, and also performed in a dog the first splenectomy. Pasteur came almost accidentally to human diseases from his researches into brewing and wine-making; Jesty, the Dorset farmer, noticing how milkers were rendered immune from smallpox, practiced systematic inoculation with cowpox with such success that Jenner was led thereby to the introduction of vaccination. — Nixon, J. A.: The Art and Science of Medicine in Relation to Professional Training, *Brit. M. J.*, Sept. 1, 1928.

Clinical Notes, Suggestions and New Instruments

A CASE OF PELLAGRA FOLLOWING VOLUNTARY REDUCTION OF DIET *

PAUL S. CARLEY, M.D., NEW YORK

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Mrs. J. W. S., a white woman, aged 33, presented herself for examination, Dec. 27, 1927, because of abdominal distress, loss of weight, sore mouth, and roughening and redness of the backs of both hands.

HISTORY

The patient had had whooping cough at 4 years of age and no other childhood diseases. Menstruation began at 12; at 15 she began having rather severe dysmenorrhea of the spasmodic type. At 18 the appendix and right ovary (?) were removed following several attacks of acute appendicitis. At 29 another laparotomy was performed, at which time a cyst was removed from the left ovary. A perineal repair was done at the same time.

The marital history was negative. The patient had had three pregnancies, with normal deliveries; all children were living and well.

The history of the present complaint began in 1921, when the patient was 27 years of age. She described her symptoms as acute attacks of "indigestion," which consisted largely in a feeling of abdominal distention, a desire to vomit, and slight giddiness. These attacks continued until the autumn of 1922, occurring with increasing frequency. At this time she decided that certain foods disagreed with her and eliminated pork and cereals from her diet. Following her second laparotomy a full diet was prescribed by a physician and her complaint disappeared. In the latter part of 1926 the abdominal distress reappeared, and again she eliminated certain foods from her diet. About this time she began to think that she was developing a cancer of the stomach, and this caused her further to reduce her diet. The process of elimination continued until, in early December, 1927, her diet was so restricted that it contained no milk, vegetables, meat or eggs: she was existing largely on cooked cereals. The mouth and skin symptoms began about December 10.

PHYSICAL EXAMINATION

The patient was tall and poorly nourished but not acutely ill. Examination of the head and neck was negative except for the lips and mouth. The lips were pale and dry and there were several rather deep fissures on both. The mucosa of the mouth was pale; the tongue was somewhat denuded of epithelium and the edges were red. The heart and lungs were normal.

The abdomen was normal except for the scars of two operations. The extremities were normal except for the skin on the dorsal surface of both hands. On the back of each hand there was a distinct area of roughening of the skin and a slight erythema. The backs of the hands appeared as if they had been severely sunburned about two days before examination.

Laboratory examination at the time showed a hemoglobinemia (60 per cent Tallqvist) and a moderate leukocytosis, with a predominance of polymorphonuclears. (Unfortunately the record of the count was lost.) The urine was normal.

A diagnosis of early pellagra was made.

TREATMENT

Because of the voluntary restrictions that the patient had put on her food intake, the first task was that of assuring her that she had no symptoms of carcinoma of the stomach and that her great need was a balanced diet.

She was given a diet list containing 1 pound of canned tomatoes and 1 quart of cow's milk daily in addition to an ordinary unrestricted diet. She was instructed further to take 2 ounces of dried brewers' yeast, divided into three doses, in water each day.

Jan. 12, 1928 (fifteen days later), the dermatitis had disappeared and the mouth symptoms were clearing up. Owing to difficulty in obtaining cow's milk, she was put on a normal mixture of dried whole milk and water at this time.

January 26, the mouth symptoms had disappeared, and the patient had gained 5 pounds (2.3 Kg.). At this time the dosage of yeast was reduced to 1 ounce daily. There had not been any gastric distress associated with the fairly large dose which she had been taking.

COMMENT

The patient was seen at fortnightly intervals. The gastric distress had disappeared soon after she was informed that she had no symptoms of carcinoma. There has been, up to the present, no recurrence of symptoms. Dr. Joseph Goldberger, Surgeon, U. S. Public Health Service, saw the patient, July 18, 1928, and found no suggestion of pellagra on physical examination. At this time she had made a total gain in weight of 22 pounds (10 Kg.) since she was first seen.

The case is of interest largely because it is one of the rare instances in which voluntary restriction of diet to alleviate a largely imaginary complaint resulted in symptoms fitting with the diagnosis of pellagra.

61 Broadway.

* The studies and observations on which this paper is based were conducted with the support and under the auspices of the International Health Division of the Rockefeller Foundation.

WHITEHEAD DEFORMITY *

DUDLEY SMITH, M.D., SAN FRANCISCO

The Whitehead operation for hemorrhoids is defined as "the excision of the pile-bearing segment of mucous membrane, together with its piles, followed by the immediate suturing of the divided mucous membrane above to the skin below."

This operation enjoyed a wide popularity for a number of years, but unfortunate sequelae gradually reduced this popularity until in recent years it has been done less and less frequently. At the London meeting of the American Proctologic Society in 1924, Mr. J. Lockhart-Mummery remarked that if the meeting had accomplished nothing else it would have been justified by having sounded the death knell of the Whitehead operation.

The condition which I have designated the Whitehead deformity is the usual type of bad result which in a considerable percentage of cases follows this procedure. There is a skin stricture at the anal margin, usually with a lumen about one-half inch in diameter through which the loose ampullar mucosa prolapses, becomes ulcerated and bleeds. Because of the stricture the sphincter does not function well, so that there is inability to control thin feces and inability to pass formed stools. Mucous discharge is constant, causing irritation of the perianal skin and frequently pruritus.

I have treated seven cases in which this condition existed, and the results have proved so satisfactory that I feel impelled to report the technic used.

The skin stricture is cut through with the electrocautery at four points, the bulging areas of mucosa are excised with the clamp and cautery, and the mucous membrane is cauterized from the skin margin upward for a distance of two-thirds inch in the entire circumference of the anal canal. It is usually necessary to touch up certain areas with the cautery two or three times subsequently, until finally an anal canal is produced which is lined by scar tissue with a surface closely simulating the normal transitional epithelium of the anal canal.

If the ampullar mucosa above is redundant and tends to prolapse, 5 per cent quinine urea hydrochloride solution is injected under the mucosa in four areas about 2 inches above the anorectal line.

As soon as it is possible to do so without too much discomfort, the patient is directed to pass a 1 inch dilator once daily and this is continued for six or eight weeks.

Contrary to the generally accepted belief that the scar tissue from a burn tends to contract firmly, it has been my experience that a flexible scar is produced if it is properly manipulated or dilated after healing has taken place.

* Read before the American Proctologic Society, Minneapolis, June 11, 1928.

* From the Surgical Department, University of California Medical School.

The first patient treated by this method has been well for two and one-half years, the second for two years, and the rest for shorter periods. The length of time these patients had suffered from Whitehead deformity varied from twenty-two years to three years, and all are entirely relieved of their symptoms and well satisfied with the result of the treatment.

909 Hyde Street.

The Chemical Laboratory

THE FOLLOWING IS A REPORT OF THE CHEMICAL LABORATORY OF THE AMERICAN MEDICAL ASSOCIATION. P. N. LEECH, Director.

EXAMINATION OF THREE CAFFEINE-REDUCED (SO-CALLED DECAFFEINATED) COFFEES

The use of coffee in the United States has increased yearly until now the annual consumption is estimated as being well over 10 pounds per capita[1]—the greatest of any country. An average coffee is officially described by the National Formulary V as "the dried ripe seed of *Coffea arabica* Linné or *Coffea liberica* Bulliard (Fam. *Rubiaceae*), deprived of most the seed coat and roasted until a dark brown color and characteristic aroma are developed. Coffee yields not less than 1 per cent of caffeine, not less than 3 per cent and not more than 5 per cent of total ash, and not less than 10 per cent fat." During the roasting certain changes take place which affect in the main the flavor, owing to the formation of a volatile, oily substance—*caffeol*. The chief constituent of coffee, as far as its pharmacologic action is concerned, is the alkaloid caffeine, trimethyl-xanthine, modified of course by the presence of associated products such as furfuryl alcohol, pyridine, and other substances. In view of the wide use of coffee as a beverage, it is not surprising to note that there are persons who seem to be what certain advertising copywriters have termed "coffee sensitive." The untoward effects of coffee have been ascribed to: (*a*) caffeine; (*b*) volatile oils (so-called empyreumatic substances); (*c*) tannin-like substances, and (*d*) a combination of the action of the foregoing.

The relative importance of the three ingredients from the standpoint of undesirable reactions in a sensitive person is popularly presumed to vary in accordance with the order given, the most potent ingredient generally being considered caffeine. In an ordinary cup of coffee, there is on an average 0.1 Gm. (1½ grains) of caffeine; the therapeutic dose of the pure drug, that is caffeine alone, as given in the United States Pharmacopeia X, is 0.15 Gm. (2½ grains). In view of the number of so-called coffee sensitive persons, it is not surprising that enterprising manufacturers should have placed on the market both coffee substitutes and coffees in which the caffeine is stated to have been reduced.[2]

The scope of this report will be confined simply to a discussion of the caffeine content of the most widely advertised caffeine-reduced (decaffeinated) coffee products, and not to the presence or the absence of other constituents.

PRODUCTS EXAMINED

The types of caffeine-reduced coffee products are mainly those in which the green bean has been subjected to appropriate treatment to remove a certain proportion of the caffeine. The extracted bean is then subjected to a roasting which is similar to the process used for ordinary coffee. "Coffees" of this type are marketed both in the whole and in the ground bean. Another type is the so-called soluble coffee extract from which, it is claimed, some of the caffeine has been removed. In view of the importance of checking the caffeine content, the A. M. A. Chemical Laboratory was requested by the advertising committee of THE JOURNAL to examine the caffeine-reduced extract known as "Blanke's *Refined* Health Coffee." While the Laboratory was working on this problem, it seemed desirable to take up two other widely advertised products of the same general character, and for this reason the examination included Kaffee Hag and Sanka. Original specimens of these products were purchased on the open market..

Blanke's Refined *Health Coffee.*—Blanke's Health Coffee is made by the Blanke Health Coffee & Tea Corporation, St. Louis. The following statements occur on the label:

> Contents of this can will make 60 cups average strength Coffee same as is ordinarily made from 2 lbs. of Regular Coffee by the Old Method.
>
> BLANKE'S HEALTH COFFEE
>
> A Pure Coffee Highly Refined and Concentrated. Our Process of making and refining this soluble product results in
> Caffein Reduced approximately 90%.
> Free Tannic Acid practically eliminated.
> Dextrose increased approximately 43%.
> No Chemicals used in the process of manufacture. Indicated in all cases when regular coffee is detrimental to general health.
>
> DIRECTIONS: Place a Heaping half teaspoonful in dry cup, add boiling water. The Powder immediately dissolves and is ready for serving. The convenience and economy of Blanke's Health Coffee as well as its High Quality makes it preferable for the Home, Cafes and Hotels, as well as for Sick-Rooms and Hospitals.
>
> Turn can over several times before each using.
>
> Take about One Heaping Half Teaspoonful on dry spoon, put in cup, then pour Boiling Water and serve a perfect cup of coffee.

Kaffee Hag.—Kaffee Hag is marketed by the Kaffee Hag Corporation of Cleveland. It was recently purchased by the Kellogg Company of Battle Creek, Mich. Claims made for the product, as appearing on the label, are:

> COFFEE 97% of the caffeine removed.
> Healthful and good COFFEE.
>
> A delicious blend of choice, selected coffee, and nothing else, having every pleasant and cheering attribute of the finest coffees grown anywhere in the world. Rich, aromatic and fragrant, it satisfies the discriminating taste of the coffee epicure. The harmful, habit-forming drug CAFFEINE has been removed—as guaranteed— by our patented process, one of the important contributions of modern science to the cause of health. It will not keep you awake nights, and is good the day round.
>
> You can drink Kaffee Hag just as often and as strong as you like.

Sanka Coffee.—Sanka is sold by the Sanka Coffee Corporation, New York, which was recently purchased by the Postum Co. The following appears on the trade package:

> SANKA COFFEE CAFFEIN FREE 97%
>
> A statement by the Originator of COFFEE without CAFFEIN.
>
> COFFEE SANKA is the original "Caffein-free" coffee (Café Sans Caffein) so favorably known to Americans who visit European countries.
>
> Our improved process enables us to produce caffein-free coffee more delicious than any heretofore offered. We removed at least 97% of the caffein.
>
> COFFEE SANKA may be enjoyed at any time—it does not cause sleeplessness or nervousness—COFFEE SANKA is recommended when other coffee is forbidden.

In an accompanying circular, it was again stated that Sanka was 97 per cent caffeine free, and that the process used opens up the cells of the bean, releases and removes the caffeine and with it brings away the rancid-tasting coffee wax, a substance which is highly indigestible.

ANALYSES

More than fifteen years ago there appeared on the market a so-called decaffeinated coffee under the name "De Kofa," Merck's Caffeinless Coffee (Merck & Co.). It attracted sufficient attention to warrant the A. M. A. Chemical Laboratory in investigating its caffeine content. The product was found to contain 0.15 per cent of caffeine. The Laboratory concluded that "the phrase 'Caffeinless' can do but one thing—disguise the truth and hence should be dropped" (THE JOURNAL, July 1, 1911).

In 1916, the Connecticut Agricultural Experiment Station analyzed "DeKofa and Kaffee Hag (names for the same product)" and reported the presence of 0.04 per cent caffeine by weight as compared with 1.20 per cent caffeine in commercial Java. This analysis supported the claim that 95 per cent of the caffeine has been removed. Later the Connecticut station reported the presence of approximately 0.12 per cent of caffeine,

1. This is limited to coffee—not to tea, yerba maté and other caffeine containing products used for beverages. The coffee consumption is not on a basis justifying the conclusion that the United States uses more caffeine per capita.
2. The extracted caffeine is also a source of revenue.

or about 3 times as much as in the previous report of this station.

Analyses made in the A. M. A. Chemical Laboratory on specimens purchased late in 1927 and early in 1928 are recorded in table 1. The caffeine was extracted by the official method as given in the Method of Analysis of the Association of Official Agricultural Chemists, second edition, and by weighing the caffeine.

TABLE 1.—*Analyses of the So-Called Decaffeinated Coffees*

Brands	Per Cent Moisture	Per Cent Ash	Per Cent Crude Caffeine Determined by Weight
Blanke's *Refined* Health Coffee †	3.18	15.12	3.98
Kaffee Hag †.....	1.91	1.56	0.50*
Sanka Coffee †.....	2.32	4.00	0.28

* This is by weight. Based on a nitrogen determination, it would be somewhat lower in value. The ordinary Kjeldahl determination generally gives values much too low, so that the micro-Kjeldahl nitrogen determination (J. Am. Chem. Soc. **46**: 2066, 1924) was used to check this figure. It was found to be 0.33 per cent caffeine based on the nitrogen assay.

† Microscopic examination of Blanke's *Refined* Health Coffee indicated it to be soluble to the extent of about 90 per cent in cold water; the remaining 10 per cent was almost devoid of vegetable tissue. No powdered coffee or vegetable tissue adulterant was found. Chicory or other vegetable tissue adulterant was not found in either Kaffee Hag or Sanka.

WHAT DOES NINETY-SEVEN PER CENT REMOVAL MEAN?

Coffee varies in caffeine content from as little as 0.1 per cent to as much as 7 per cent, though the latter figure is very exceptional. Obviously, without knowing how much caffeine is in the original coffee (which the manufacturers do not state), it is impossible to calculate the amount removed. Assuming that ordinary coffee contains 1.2 per cent caffeine by weight—a figure often quoted in the literature—the percentage of caffeine removed, as based on the foregoing analysis, would come to much less than the claimed 97 per cent removal in the case of the two "decaffeinated coffees" and the claimed 90 per cent removal in the case of the coffee extract.

But the figures of caffeine removal, even if correctly stated, mean little because the quantity of coffee used is the factor in determining the amount of caffeine consumed.

WHAT IS THE AMOUNT OF CAFFEINE PER CUP?

The physician prescribing a so-called decaffeinated coffee is not concerned primarily with the amount of caffeine that has been removed from the bean but with the quantity of caffeine that his patient obtains, particularly the relative amount of caffeine in comparison with a cup of ordinary coffee.

Numerous investigators have shown that an ordinary cup of coffee contains from 0.1 to 0.12 Gm. (1½ to 1¾ grains) of caffeine. In the comparisons in this article, the greater quantity will be used.

Blanke's Refined *Health Coffee.*—The label of the product examined states that the container holds sufficient extract to make sixty cups of coffee; this is distinctly at variance with the directions (including the illustration) to use one heaping half teaspoonful per cup. If the product did make sixty cups of coffee, each cup would contain, therefore, approximately 0.04 Gm. (⅗ grain) of caffeine. If prepared according to the directions—which most probably is the method by which the consumer would prepare the coffee—the can would contain sufficient coffee for only thirty-seven cups.[3] Each cup would therefore contain the equivalent of approximately 0.065 Gm. (1 grain) of caffeine. As the average cup of coffee contains about 1½ to 1¾ grains of caffeine, it can be seen that Blanke's *Refined* Health Coffee cannot be considered as decaffeinized coffee.[4] The statement "Caffeine Reduced approximately 90 per cent" is therefore misleading and not truthful.

A further point of consideration in the case of coffee extract is that of taste. Experiments with coffee tasting indicate that to obtain a taste comparable to that of ordinary coffee (as obtained in a number of restaurants) requires more of Blanke's *Refined* Health Coffee than indicated on the label, so that the caffeine content might be considerably more than 1 grain per cup.

Kaffee Hag.—The directions for preparing Kaffee Hag given on the seal are: "Make Kaffee Hag like any other coffee." A letter asking what proportions the firm recommended elicited the following reply:

> We have advised generally the use of a heaping tablespoonful of Kaffee Hag for a cup of good coffee. However, you may vary this to suit your taste. It will not harm you.
>
> Nor will it contain the amount of caffeine in an ordinary cup. We remove 97% and more, so you may make it as strong as you like and drink as much as you wish without harm.

One heaping tablespoonful of Kaffee Hag varies in weight from 15 to 16 Gm. The amount of caffeine per cup in the specimen referred to in the foregoing report, as calculated from the reported analysis (0.33 per cent caffeine), would be equivalent to almost 1 grain per cup, as against 1¾ grains in a cup of ordinary Java. Furthermore, if one followed the recommendation of the firm "to drink it as strong as you like and drink as much as you wish," the dose of caffeine obtained from this particular specimen might be considerable.

Sanka.—The directions for preparing Sanka as given in the accompanying circular are:

> Use a heaping tablespoonful of coffee for each cup and one for the pot. In other words, to prepare coffee for four persons, use five spoons of coffee. Pour seethingly boiling water over it and leave it to draw for about five minutes and the coffee will be ready for use.

In reply to an inquiry the Sanka Coffee Corporation wrote:

> The caffeine percentage in a cup of SANKA coffee is so infinitesimal that there is no possibility of this drug having a harmful effect even on an infant.
>
> The percentage of caffeine in a cup of SANKA coffee is the same regardless of the quantity of coffee used. A hundred pounds of SANKA coffee has comparatively the identical caffeine percentage as several tablespoonfuls. In other words, if there is more caffeine, it also holds true there is more coffee to offset the caffeine.
>
> You can weaken or strengthen the coffee by the amount you use to prepare a cup.

Following these directions, and calculating from the foregoing analysis, it was found that the amount of caffeine would be equivalent to about one-half grain per cup as compared with 1¾ grains of ordinary Java; in other words, about one-fourth as much caffeine as would be obtained in the average cup of ordinary coffee.

TESTING THE ACTUAL BEVERAGE

To demonstrate clearly that the calculations of the amount of caffeine per cup of coffee were justifiable, beverages were prepared with Kaffee Hag in one case and Sanka in the other. The firms' directions were followed; six tablespoonfuls of coffee for five cups (one tablespoonful per cup and one for the pot) was placed in the upper compartment of an ordinary percolator coffee pot and the coffee was percolated for only five minutes (which does not remove all the caffeine, and is not as efficient in this respect as the boiling method).

The amount of caffeine found in a cup of Kaffee Hag by this method of incomplete removal was approximately three-fourths grain. If the beverage had been made for only two cups (which would require three tablespoonfuls), the amount of caffeine would have been proportionately greater.

The amount of caffeine found in a cup of Sanka by the foregoing method of incomplete removal was four-tenths grain. If the beverage had been made for only two cups (which would require three tablespoonfuls), the amount of caffeine would have been one-half grain per cup.

A SECOND EXAMINATION

In view of the surprising amounts of caffeine found in Kaffee Hag and Sanka, it was decided that a second examination should be made before publishing the results. Original specimens were purchased in another city to insure different lots.

3. Several determinations showed that the average weight of one heaping half teaspoonful (as recommended by the firm) was 1.6 Gm.

4. Since this analysis was made, the Blanke Health Coffee & Tea Corporation has signified its intention of changing the directions and illustration on the container to a "heaping one-half *small* teaspoonful" (italics ours). The Blanke Health Coffee & Tea Corporation has also submitted reports of examination by Dr. LeRoy McMaster, professor of chemistry, Washington University, St. Louis, and A. D. Little, Inc., of Cambridge, Mass. McMaster's report does not state the percentage of caffeine in the extract, but states that a cup of coffee prepared by using the small dosage contained 0.64 grains of caffeine. A. D. Little, Inc., found about 50 per cent more caffeine in the sample examined than reported in this paper. Based on the minimum—and unlikely—dosage of sixty cups per 2 ounce can, A. D. Little, Inc., reports approximately 1 grain of caffeine per cup!

This can of Kaffee Hag bore the new label of the Kellogg Company, Battle Creek, Mich.[5] The directions have been changed somewhat as noted in the footnote.

The results of the second examination are given in table 2.

TABLE 2.—*Second Analysis of the So-Called Decaffeinated Coffees*

Brands	Per Cent Moisture	Per Cent Ash	Per Cent Crude Caffeine
Kaffee Hag	0.44	2.48	0.52*
Sanka Coffee	2.18	2.60	0.32

* See later work on this specimen.

ATTITUDE OF MANUFACTURERS TOWARD INVESTIGATION

The summary of the results of the A. M. A. Chemical Laboratory investigation was sent to the respective manufacturers for their consideration. Their attitude toward the investigation was as follows:

Blanke's Refined *Health Coffee.*—In reply this firm stated:

> We have revised our advertising to confirm with the findings of later analyses of our products. There is one point however, which we hope you will consider in comparing Blanke's Health Coffee with all other treated coffees in the market. This is our practically complete removal of tannic acid. A feature which we believe cannot be truthfully claimed by any other product.

Enclosed was a letter, which, according to the firm, was being mailed to physicians in certain localities. This letter shows a complete reversal by the Blanke concern, and, as usual, the firm endeavors to place the blame on the medical profession rather than on itself. The following paragraph is typical:

> More recent investigation has convinced many doctors, however, that the tannic acid, and not the caffeine is the real culprit in coffee. As evidence, what doctor will include tannic acid in his prescriptions, but you know how commonly caffeine is included.

The point to be considered is that there is practically no difference in the caffeine content in a cup of Blanke's beverage, prepared strictly according to directions, and that of an ordinary cup of coffee. Indeed, there is likelihood of there being more caffeine in the average cup of Blanke's coffee than in a cup of ordinary coffee, because of the fact that few use such small quantities of the Blanke extract as recommended on the can. As far as the tannin claims are concerned, they are utterly unsupported by any adequate evidence. There is so little tannic acid in coffee that it is highly improbable that it would be removed in such quantities as to make any practical difference in the beverage itself as compared with ordinary coffee beverage.

A package of Blanke's Refined Health Coffee recently purchased direct from the firm still contains the following statement:

> Our Process of making and refining this soluble product results in CAFFEINE REDUCED approximately 90%. FREE TANNIC ACID practically ELIMINATED.

What further evidence is required of definite misbranding?

Kaffee Hag.—When the results of the analyses were sent to the Kaffee Hag Corporation, they telegraphed some days later that they believed that the analytic methods of the A. M. A. Chemical Laboratory were faulty, as each batch had been checked by the Kaffee Hag Corporation, and there was no report showing under 90 per cent of caffeine removal. In the subsequent extensive correspondence, it appears that the firm also makes two other coffees—Night Cap and Dekofa—which provide an outlet when the caffeine percentage removal is not low enough.

According to the firm, the percentage of removal is based on the theoretical assumption that the coffee before removal contains 1.34 per cent caffeine.

In view of the fact that the firm challenged the methods of the A. M. A. Chemical Laboratory, the analyses were rechecked by an independent commercial laboratory (The Miner Laboratories, Chicago), and also by the A. M. A. Chemical Laboratory.

In the first specimen, the commercial laboratory reported 0.31 per cent caffeine by weight, and 0.28 per cent by nitrogen determination. The A. M. A. Laboratory obtained the following: 0.50, 0.56, 0.44, and 0.40 per cent caffeine by weight; average of all A. M. A. determinations, 0.48 per cent; nitrogen determinations yielded 0.33; 0.31; 0.29; 0.26 per cent.

In the second specimen, the commercial laboratory obtained considerably less than the A. M. A. Laboratory, namely 0.12 per cent by nitrogen determination. The A. M. A. Laboratory found an average (based on four determinations) of 0.40 per cent by weight, but 0.2 per cent by nitrogen, which indicated that the figure in the second analysis by weight, reported above, was higher than justified by the nitrogen determination.

Nevertheless these figures are decidedly greater than they should be to substantiate the claim of 97 per cent removal of caffeine. It should be pointed out, however, that these specimens of coffee were purchased in the early part of December, 1927, and in March, 1928, before the report was made to the Kaffee Hag Corporation. Attention has been called to the fact that the Kellogg Company obtained control of the Kaffee Hag Corporation in the latter part of December, just prior to the first of the year.

The A. M. A. Chemical Laboratory agreed to delay publication of its report until the Kaffee Hag Corporation could have an analysis made for the concern by some outstanding commercial laboratory employing recent market specimens. In accordance with a plan evolved, an eastern firm of commercial chemists was authorized by the Kaffee Hag Corporation to purchase on open market specimens of Kaffee Hag. The report of the chemical firm, under date of August 11, states in part:

> We are giving you herewith the results of our caffeine determination on ten samples of Kaffee Hag which have been obtained from ten different cities:

City	Can No.	Caffeine %
Boston	21	0.08
Providence, R. I.	21	0.12
Philadelphia	20	0.11
Washington, D. C.	12	0.07
Baltimore	826	0.10
New Haven, Conn.	825	0.12
Newark, N. J.	826	0.05
New York	829	0.09
Lynn, Mass.	B25	0.04
Springfield, Mass.	14	0.08

> The numbers which we have indicated above are those which were stamped on the bottom of each can.

After this report had been set in type, another report by this firm of chemists under date of August 27 was received:

Mark	Can. No.	Caffeine (N x 3.464)
Boston, Mass.	21	0.042%
Providence, R. I.	21	0.045%
Philadelphia, Pa.	20	0.042%
Washington, D. C.	12	0.029%
Baltimore, Md.	826	0.053%
New Haven, Conn.	825	0.076%
Newark, N. J.	826	0.045%
New York City	829	0.038%
Lynn, Mass.	B25	0.031%
Springfield, Mass.	14	0.035%

> This certificate supersedes our report of August 11 on this sample.

It should be mentioned that the control numbers on the cans appear to be a recent innovation, as they did not appear on the original cans of Kaffee Hag. The latest number in the possession of the A. M. A. Chemical Laboratory at the time of analysis is six (or nine).

Interpreted in terms of caffeine removal, assuming that an ordinary coffee contains 1.2 per cent of caffeine by weight, the first figures submitted by the firm of commercial chemists show that the caffeine present varies between 90 and 96.6 per cent by weight, the average being 93.8 per cent. When based on the nitrogen determinations assuming ordinary coffee to

5. "KAFFEE HAG is coffee—your favorite recipe will make a delicious cup.

"A heaping tablespoonful of coffee to the cup (with one for the pot) is about the right proportion. But your taste is the judge. Vary this proportion until you get the strength that most appeals to you.

"Because KAFFEE HAG is free of CAFFEINE and all impurities, it can be boiled without becoming bitter. If you enjoy strong coffee, a few minutes' boiling adds much to the delight you find in KAFFEE HAG."

contain 1.1 per cent caffeine, the figures submitted in the second report, based on the same ten specimens, show the caffeine to vary between 95.2 to 97.4 per cent, the average being 96.0 per cent. However in the opinion of the A. M. A. Laboratory these latter figures may be *too low for caffeine content* as the Kjeldahl method was used and not the micro-Kjeldahl method referred to above (see footnote to table 1). In addition the firm submitted the results of 111 analyses made by its own laboratory. The most caffeine found was 0.156 per cent (indicating 85.8 per cent removal based on 1.1 per cent caffeine by nitrogen); the smallest caffeine figure was 0.014 per cent (indicating 98.7 per cent removal). The grand average was 96.9 per cent. It is the opinion of the A. M. A. Chemical Laboratory that Kaffee Hag now on the market, based on the analyses of recent specimens by the eastern firm of commercial chemists as well as on the information supplied by the firm, has its caffeine content greatly reduced. It is also the opinion of the Laboratory that it is entirely needless to remove 97 per cent of caffeine, and that from a practical point of view it is improbable that the firms can maintain this high percentage removal from batch to batch. For practical purposes, 90 per cent of caffeine removal is as satisfactory as 97 per cent. For instance, a cup of coffee made from Kaffee Hag containing 0.11 per cent of caffeine (90 per cent removal) would contain approximately one-eighth to one-fourth grain of caffeine. From the published evidence, it seems unlikely that the caffeine effect could be obtained by adults on this small amount of caffeine. On the other hand, the physician should bear in mind that it might not be advisable at times to follow the recommendation "that one can use as much Kaffee Hag or drink it as often as one pleases without any caffeine effect."

Furthermore, for the interest of the profession, it is advisable to think not in terms of percentage of caffeine removal but in terms of the amount of caffeine per cup. If the product used is consistently decaffeinated from batch to batch, it is unlikely that caffeine in amounts less than one-half grain per cup will produce a caffeine effect in the adult, provided not more than one cup is taken at a meal.

In accepting advertisements of decaffeinated coffees, the advertising committee of THE JOURNAL has decided to adhere to such principles.

Sanka.—When the results of the analyses were sent to the Sanka Corporation, it immediately obtained the services of two commercial chemists. Under date of May 21, it reported a statement of the examination with the result noted in table 3.

TABLE 3.—*Analysis of Sanka Coffee*

	Per Cent of Caffeine Ground	Per Cent of Caffeine Sanka Bean
Hochstadter Laboratories	0.082	0.118
Smith Laboratory	0.096	0.072
Hochstadter Laboratories	.....	0.128
		0.096

On the assumption that the coffee originally contained 1.2 per cent of caffeine by weight these figures would indicate that the percentage of removal varied from 89.4 to 94 per cent. The figures found, however, were not greatly different from those found by A. M. A. Chemical Laboratory. The firm also stated that the amount of caffeine in an 8 ounce cup, prepared from Sanka Coffee and Sanka bean, varied from one-eighth grain to one-half grain. However, the quantity of coffee used in preparing this cup of coffee in the case of the one-half grain determination was greater than that which the A. M. A. Chemical Laboratory employed, and greater than that recommended on the package. This probably accounts for the fact that such caffeine analyses of the beverages yielded a larger caffeine content than that found by the A. M. A. Chemical Laboratory. Since then other analyses have been received showing an average of 0.0378 per cent caffeine, equivalent to 96.2 per cent removal on basis of 1.1 per cent caffeine originally present. On an average, it may be said that the amount of caffeine in a cup of beverage prepared from Sanka is approximately that prepared from Kaffee Hag, according to the latest figures from the two concerns, and likewise the discussion in reference to the caffeine content in Kaffee Hag in a foregoing paragraph is equally applicable to the Sanka beverage.

CONCLUSIONS

1. Specimens of Kaffee Hag and Sanka, purchased on the open market in December, 1927, yielded caffeine in considerable amounts. It appears improbable that Kaffee Hag or Sanka can strictly maintain the claims of 97 per cent of caffeine removal, and from a practical standpoint, such a high figure is not necessary.

2. The amount of caffeine removal in current market specimens, according to the recent analysis submitted by the respective firms, does approximate well over 90 per cent, if it is assumed that 1.2 per cent of caffeine by weight, or 1.1 per cent based on nitrogen determination, was originally present.

3. The statements that 97 per cent of caffeine is removed in the case of Kaffee Hag and Sanka Coffee, and that 90 per cent of caffeine is removed in the case of Blanke's *Refined* Health Coffee, are essentially meaningless unless the amount of caffeine originally present is declared on the label.

4. Routine checking of each batch of material prepared is desirable to assure the minimal caffeine content claimed. The Kaffee Hag and the Sanka corporations have arranged for such analyses.

Blanke's *Refined* Health Coffee still contains a relatively large amount of caffeine, notwithstanding the claim that 90 per cent of caffeine has been removed.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

METAPHEN (See New and Nonofficial Remedies, 1928, p. 274).

The following dosage form has been accepted:

Ampoules Metaphen Solution 1:1,000, 10 Cc.: 1 part metaphen dissolved in 1,000 parts of water by means of sodium hydroxide (four molecules of NaOH for every molecule of metaphen).

ERYSIPELAS STREPTOCOCCUS ANTITOXIN (See New and Nonofficial Remedies, 1928, p. 353).

Lederle Antitoxin Laboratories, New York.

Erysipelas Streptococcus Antitoxin (Lederle) Refined and Concentrated.—An antitoxic serum prepared by immunizing horses by subcutaneous injections of the toxic filtrate obtained from broth cultures of the erysipelas streptococcus, or by intravenous injection of cultures of the erysipelas streptococcus obtained from typical cases of erysipelas. When test bleedings show the serum to have reached a sufficient degree of potency, the horses are bled aseptically into sodium citrate and the plasma is refined and concentrated by a method similar to the Park-Banzhaf process. Potency is tested by making serial dilutions of the serum with equal volumes of a dilution of erysipelas toxin of such strength that 0.1 cc. of the toxin-antitoxin mixture will contain 1 skin test dose of toxin; these are injected intradermally into goats, the highest dilution of antitoxin in the mixture indicating the potency of the product. Erysipelas streptococcus antitoxin (Lederle) refined and concentrated is administered in early cases of moderate severity in one "basic dose" (the entire content of one syringe as marketed) intramuscularly, repeated if necessary at intervals of twenty-four hours until the erysipelatous blush disappears; in late and severely toxic cases, dosage up to five or six basic doses intramuscularly or, in extreme cases, intravenously, is recommended. It is marketed in packages of one syringe containing one basic dose.

DIPHTHERIA TOXOID (See THE JOURNAL, Aug. 4, 1928, p. 321).

E. R. Squibb & Sons, New York.

Diphtheria Toxoid-Squibb.—Anatoxine Ramon.—Prepared from diphtheria toxin by treatment with formaldehyde as prescribed by the U. S. Public Health Service to secure detoxification, which is tested by injection of five maximum human doses into guinea-pigs weighing 300 grams. The product is tested for antigenic potency by injection into at least ten guinea-pigs of one human dose each; if at the end of thirty days at least 80 per cent of the animals survive the injection of five minimum lethal doses of diphtheria toxin, the toxoid is considered satisfactory. Diphtheria toxoid-Squibb is standardized to contain in 2 cc. enough of the toxoid for one immunization treatment. It is marketed in packages of one immunization treatment containing one 1 cc. ampule of diluted diphtheria toxin for the reaction test and two 1 cc. ampules of diphtheria toxoid for treatment.

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SATURDAY, SEPTEMBER 22, 1928

CAFFEINE AND URIC ACID EXCRETION

In a series of reviews on "Truth and Poetry Concerning Uric Acid," published nearly a quarter of a century ago in The Journal, the reader was reminded that the history of uric acid dates from a year easily remembered. In 1776 the substance was discovered by Karl W. Scheele as the constituent of a concrement, and Bergman found it in a stone from the bladder. It was soon recognized as a normal ingredient of the urine, and it became the object of a long series of studies. The older theories which assumed that "uric acid stands a rung higher on the ladder of descending proteid metabolism than does urea" were abandoned, as were those which made it a product of "suboxidation" in the body. Uric acid presently was demonstrated to owe its origin to the metabolism of purine compounds whether they were of endogenous or of exogenous origin. A purely synthetic origin, in man, remains extremely unlikely.

Meanwhile, the enthusiasm about circulating uric acid as the materies peccans of a long list of disorders ranging from headache to "rheumatism" has greatly abated. Even in 1905 Barker felt justified in remarking that, after all, it may turn out that disturbances of metabolism, of a nature unguessed as yet by us, may be more important in the pathogenesis of gout than the disturbances of uric acid metabolism. The promotion of uric acid elimination has made progressive strides. Obviously, the complete control of the migrations of the catabolite in the body cannot be attained until all its precursors are clearly established. For years debate has centered in the metabolic fate of methylated purines, notably the derivatives of xanthine that enter into the diet of man in the form of the caffeine of tea and coffee, the theobromine of the various cocoa preparations, and the methylated purine drugs.

In 1916 Benedict,[1] and in 1917 Mendel and Wardell,[2] published the records of investigations which seem to show conclusively that the ingestion of caffeine is followed by an increase in uric acid excretion and that this increase is perhaps caused by the demethylation and subsequent oxidation of at least a part of the ingested caffeine. The subject has been reinvestigated by Myers and Wardell[3] with much care. They conclude that the ingestion of caffeine is followed by an unmistakable increase in the excretion of uric acid. The ingestion of theobromine is not followed by an augmentation in the excretion of uric acid, but the ingestion of theophylline is usually followed by a definite increase. The origin of the gain in uric acid excretion observed after caffeine and theophylline has not been definitely ascertained. Stimulation of metabolism alone seems insufficient to account for all the extra uric acid, and it is suggested that the increase may be due, at least in part, to the transformation of caffeine and theophylline to uric acid or methyl uric acids.

1. Benedict, S. R.: J. Lab. & Clin. Med. **2**: 1 (Oct.) 1916.
2. Mendel, L. B., and Wardell, Emma L.: Effect of Ingestion of Coffee, Tea and Caffeine on the Excretion of Uric Acid in Man, J. A. M. A. **68**: 1805 (June 16) 1917.
3. Myers, V. C., and Wardell, Emma L.: The Influence of the Ingestion of Methyl Xanthines on the Excretion of Uric Acid, J. Biol. Chem. **77**: 697 (May) 1928.

THE JOURNAL OF NUTRITION

The biologic sciences have experienced a thrifty development in many directions since the latter part of the nineteenth century. They touch on or enter into the field of medicine in divers ways. Medicine is permeated, for example, by the intensive study of manifold types of micro-organisms that have come to be investigated in every detail of their life history and metabolism as well as with respect to their possible rôle as agents of disease. The discovery of the transmission of various maladies by insect vectors has indicated the significant relationship of entomology to medicine. Particularly notable of late have been the new strides of the science of nutrition, an essential part of physiology that has sometimes been designated as the institutes of medicine.

With the growth of each of these disciplines has come the establishment of journals destined to present the records of research in the specialties represented. Scarcely more than a quarter of a century has elapsed since the foundation of the *American Journal of Physiology*, which made it possible for American students of the subject to publish their researches in this country in their own "professional" journal instead of sending their contributions abroad, as was extensively done thirty years or more ago. Presently a new offshoot appeared in the *Journal of Biological Chemistry*, founded by the late Christian A. Herter to provide an opportunity for publication of papers on the borderline between chemistry and physiology. The *Journal of General Physiology* was started by Jacques Loeb a few years before his untimely death. All of these journals, as well as several others less directly related to the subject, have served to present valuable contributions to the broad field of nutrition, including papers on

alimentation, metabolism, energetics, foods, and other subdivisions of the larger theme.

This fall witnesses the addition of a new member to the group, the *Journal of Nutrition*,[1] published under auspices that promise success to the undertaking. The editorial board includes E. F. Du Bois, New York; H. M. Evans, Berkeley, Calif.; E. B. Forbes, State College, Pa.; Graham Lusk, New York; E. V. McCollum, Baltimore; Lafayette B. Mendel, New Haven, Conn.; H. H. Mitchell, Urbana, Ill.; Mary Swartz Rose, New York; H. C. Sherman, New York; Harry Steenback, Madison, Wis., and J. R. Murlin of the University of Rochester, N. Y., who will act as managing editor. The outer cover of the new journal is embellished by a beautiful imprint of Lavoisier, who is often mentioned as the "father of the science of nutrition."

BREAST MILK—A VARIABLE FOOD

The statistics of infant mortality show convincingly that breast feeding during the early months of life is an actual advantage to the child. Nutrition with mother's milk affords a better chance for survival in what has been termed "the perilous first year." A recent analysis [2] of the death rates by causes of death discloses that the excess mortality among infants artificially fed was greatest from gastric and intestinal diseases, disturbances especially connected with improper feeding. Not only were the rates from gastric and intestinal diseases higher, but the rates from all the other principal causes appeared to be greater among the artificially fed than among breast-fed infants. Among those artificially fed, the death rate from respiratory diseases averages 85 per cent higher than among breast-fed babies. All other causes rate from two to five times greater in artificially fed than among breast-fed babies.

Many persons assume, on the basis of information like the foregoing regarding the baby who enjoys what Mrs. Rose has designated as "his inalienable right to Nature's food supply—his own mother's milk," that the latter is necessarily a perfect food. The quantity and quality of the supply of milk depend in the human individual as in other species in no small measure on the physiologic well being of the lactating person. Hence a recent writer [3] has properly designated breast milk as a variable food. This implies that it may fall short of being an adequate food, hence failing to meet all the needs of the baby. While death may not occur, growth and development may be far from optimal. Some of the reasons for this are made clearer through the studies now being carried on by the staff of the Nutrition Research Laboratories of the Merrill-Palmer School and the Children's Hospital of Michigan in Detroit [4] under the leadership of Dr. Icie G. Macy. These indicated through direct determinations how the quality of milk may vary from the standpoint of chemical constituents and biologic properties. A reduction in liquid intake, failure to empty the breasts completely at given intervals, and overwork have a tendency to lower quantity production.

There is sufficient evidence, as Macy and Outhouse point out, to justify the statement that breast milk from the same person may vary considerably from time to time, and that there are external factors operating which may markedly alter milk production, consequently influencing the quality and quantity of the milk received by the infant. It is of interest, too, that milk from different women may vary and that this individuality in composition may persist throughout lactation and still allow for normal growth in the babies fed upon it. However, clinical experience as well as carefully controlled feeding tests in the nutrition laboratory indicate that breast milk is by no means always adequate in respect to the necessary vitamins. The latter factors are not formed de novo in the animal body but are derived from the intake; consequently the diet of the milk producer may markedly modify the biologic quality of the secretion from the mammary glands. In the Orient, women with beriberi produce milk deficient in vitamin B with the inevitable result of beriberi in their infants. These conditions are paralleled by animal experimentation. It has been pointed out of late in THE JOURNAL [5] that the requirements of certain vitamins during pregnancy and lactation, with their drain on the maternal supply, are unexpectedly large: hence the need of an adequate dietary supply. A test of raw human milk obtained fresh daily from the Detroit Bureau of Wet Nursing and representative of the pooled milk of from ten to sixteen women on the average American dietary has demonstrated that, for experimental rats at least, human milk does not contain a demonstrable antirachitic factor, whereas cow's milk does possess a rickets-healing substance.

The lesson of the newer information is that due attention needs to be paid, perhaps to an extent not heretofore properly realized, to the diet and environmental condition of the lactating mother so that she may better be enabled to produce satisfactory milk for the entire lactation period. The situation has well been summarized by Macy and Outhouse.[3] Lack of satisfactory food, exercise, fresh air, and sunshine, and a condition of constant mental and physical fatigue of

1. The Journal of Nutrition is issued by Charles C. Thomas, Publisher, 300 East Monroe Street, Springfield, Ill. Introductory price: $3.50 (U. S. and Canada), $4 foreign. Six issues to the yearly volume; about eighty-two pages of text and illustrated matter to the issue.

2. Woodbury, R. M.: Infant Mortality and Its Causes, Baltimore, Williams & Wilkins Company, 1926.

3. Macy, Icie G., and Outhouse, Julia: Breast Milk—a Variable Food, J. Am. Dietet. A. **4**: 9 (June) 1928.

4. Macy, Icie G.; Outhouse, Julia; Long, M. Louisa; and Graham, Alice: J. Biol. Chem. **73**: 153 (May) 1927. Macy, Icie G.; Outhouse, Julia; Graham, Alice; and Long, M. Louisa: Ibid. **73**: 175, 189 (May) 1927. Macy, Icie G.; Outhouse, Julia; Long, M. Louisa; Brown, Minerva; Hunscher, Helen; and Hoobler, B. R.: Ibid. **74**: 31 (July) 1927. Outhouse, Julia; Macy, Icie G., and Brekke, Viola: Human Milk Studies: V. A Quantitative Comparison of the Antiricketic Factor in Human Milk and Cow's Milk, Ibid. **78**: 129 (June) 1928.

5. Sure, Barnett: Vitamin Requirements of Nursing Young, J. A. M. A. **89**: 675 (Aug. 27) 1927. The Vitamin Content of Human Milk, editorial, ibid. **88**: 2038 (June 25) 1927.

the mother during the prenatal and postnatal periods may manifest their ill effects in various ways. If every healthy mother would make an untiring effort to suckle her young, infant mortality would be greatly reduced. For the welfare of herself and her baby she should be as free as possible from overwork, undue anxiety, excitement and irregularity. In the selection of food it should be borne in mind that only a dietary well balanced in proteins, fats, carbohydrates, minerals and vitamins can satisfy all the demands of the body. Thus, the Detroit biochemists conclude, the tissues under such conditions may be prepared to elaborate a milk that is adequate in quantity and in which variation from the optimal in chemical and biologic properties is at a minimum.

Current Comment

CAFFEINE-REDUCED COFFEES

On another page of this issue appears a report of the Chemical Laboratory of the American Medical Association on the examination of three caffeine-reduced coffees—"Blanke's Refined Health Coffee," "Kaffee Hag" and "Sanka." Packages of each brand were purchased on the open market in December, 1927. Any statement to the effect that a certain percentage of a given ingredient has been removed from a product is meaningless, unless one knows how much of that ingredient is present originally. The A. M. A. Chemical Laboratory, as a basis for its investigation, took the position that the average percentage of caffeine by weight in ordinary coffee is 1.2, a figure that is generally accepted in scientific literature, and that an ordinary cup of coffee contains approximately 1¾ grains of caffeine. The laboratory found, as a result of its work, that, in the case of Blanke's Refined Health Coffee, supposed to have 90 per cent of the caffeine removed, a cup of coffee made from this product according to directions would contain approximately one grain of caffeine. It found, also, that a cup of Kaffee Hag made from the specimen examined—a product for which it was claimed that 97 per cent of the caffeine was removed—contained close to one grain of caffeine, while a cup of Sanka—also claimed to have 97 per cent of the caffeine removed—contained about one-half grain of caffeine. Obviously, this was a far cry from 90 per cent to 97 per cent of caffeine removed. When the facts were brought to the attention of the manufacturers, the concerns involved immediately began checking up on their products. Both the Kaffee Hag and Sanka products, as will be noted, changed hands about the time of the examination. From evidence that has been submitted since the A. M. A. analyses were made, it seems to be a fact that both Kaffee Hag and Sanka now contain caffeine in such minimal amounts as to be practically negligible. The third preparation, Blanke's Refined Health Coffee, still contains a relatively large amount of caffeine. It should be noted that Kaffee Hag and Sanka are now submitted by their manufacturers to daily checks of caffeine content, a procedure which did not prevail prior to the analyses by the A. M. A. Chemical Laboratory. The laboratory's work on these products is simply part of the Association's endeavor to protect the public health by furnishing the physicians of the country with facts regarding products that are widely advertised in the medical or health field.

DISEASE RATE IN INDUSTRY

Studies conducted by the U. S. Public Health Service indicate that the rate of absence from work from all causes of disability combined among employees of a large public utility in one of the larger cities of the United States showed no tendency to decline during the eleven-year period from 1917 to 1927. Disabling industrial accidents among male employees showed a downward trend, not only in the year-to-year incidence of the shorter cases but also in the more severe industrial disablements, in contrast to a stationary trend in the frequency of injuries of nonindustrial origin. The most important two groups of diseases from the standpoint of the amount of absenteeism they occasion in industry are diseases of the respiratory and of the digestive systems. Together these caused 68 per cent of the disabilities during the period reviewed, indicating a stationary trend. In the one-day to one-week disabilities from diseases of the pharynx and tonsils among both sexes the trend was slightly downward, although the longer-than-one-week cases among both males and females showed a tendency to increase in frequency. The more severe respiratory diseases, such as pulmonary tuberculosis, pneumonia, pleurisy, asthma and pulmonary emphysema, as a group showed a tendency to diminish in frequency among the men. Among the women the number of such cases was too small to enable one to come to any conclusion concerning the trend. The appendicitis rate increased during the period among both sexes, but this showing may have been due to a change in the methods of diagnosis, since a corresponding decrease occurred in certain other diseases of the digestive system. In the nonrespiratory, nondigestive group of diseases a marked downward trend is indicated in the incidence rate of rheumatism and the myalgias among both sexes and, among the males, for the more severe as well as for the shorter cases. Small numbers precluded observation of the trend of the more serious cases among the women. The shorter cases, i. e., those causing disability for from one day to one week, of diseases of the skin, and of miscellaneous nonrespiratory, nondigestive diseases decreased somewhat during the eleven-year period among the men. The trend of each of the other disease groups shown separately was practically stationary. The experience of this group of employees cannot be considered typical or representative of the trend of disabling sickness in the industrial population. The sample is much too small for such a purpose. But, in the absence of morbidity data for the adult working population of the country, even fragments of information concerning sickness tendencies are of interest to those working for the advancement of the public health and the prevention of disease in industry. Medical

service in industry is a relatively new development. Naturally it attacked first the problem of how industry could assist in curing and returning to work those who were incapacitated by disease. The next step to be expected is an attack on the more complex problem of how to prevent time lost from work on account of disabling sickness as well as time lost at work on account of nondisabling indispositions. To reduce sickness among groups of industrial workers, preventive measures should be definite in application. Success will depend on knowledge and control of the factors that affect the incidence rate of specific diseases. The records of the industrial company that cooperated in this study reveal the great importance of the common cold and of "indigestion" as causes of absence from work. If a record of the effect on working efficiency of the cases that did not cause actual disability were available, the story would be even more impressive.

NOSE DIVES FOR DEAFNESS

The headlines here reproduced are taken from the Grand Rapids, Mich., *Herald* of Sept. 6, 1928:

"MEDICAL" DIVES ON
FAIR PROGRAM FOR
SUNDAY AND MONDAY

DROPS TO BE MADE WITHOUT
CHARGE IN ATTEMPT TO
CURE DEAFNESS

Suddenly over our land has come a recrudescence of the foolishness that afflicted the country some years ago, when a half dozen children—more or less—were killed in attempts to restore their hearing by sudden drops in airplanes. In the Grand Rapids demonstration, the *Herald* points out, the first choice of applicants will go to those under 21, as experiments, conducted by such notable fliers as Bert Acosta and Clarence Chamberlin, have shown that, while the dives often bring relief to those under 21, they seldom do to those who are older. Three persons, one a 7 year old boy with hardness of hearing, were recently killed in Springfield, Mass. Of course physicians realize the utter folly of attempting to relieve deafness due to organic causes by such a method. In a considerable number of cases the method has been fatal as well as futile. Lieut. Col. Levy M. Hathaway, flight surgeon in the medical corps and chief of the medical section of the Air Corps of the U. S. Army at Washington, says succinctly that there is no foundation in fact for the impression that airplane flights help to cure deafness. On the contrary, defective hearing is common among aviators and is generally considered an occupational disorder associated with flying. Deafness is caused and aggravated by flying. Examinations indicate that deafness tends to progress in fliers. The roar of a 400 horsepower engine is terrific, drowning all conversation and necessitating communication by signals. This noise, together with the rapidly changing atmospheric pressure on the delicate structures of the auditory apparatus, soon dulls the sense of hearing. These effects, according to Colonel Hathaway, are cumulative and become permanent with continual exposure to the causes. Science progresses but human nature seems to be unchanging. Promoters of sideshow freaks and county fairs seem willing to exploit anything. The Babbitt would rather be relieved of deafness by a 2,000 foot drop in an airplane than by washing out impacted cerumen with a syringeful of warm water. If his deafness is purely psychological any form of suggestion may cure it; if it is organic the airplane system will not help it. The sensational escapade gives him a brief place in the sun and back porch conversation for the rest of his silly existence.

THE PAIN OF DUODENAL ULCER

Pain has been described as something easy to understand though difficult to define. Sir James Mackenzie [1] once remarked that the recognition of the factors concerned in the production of pain is of first importance in the study of disease. Not only is pain the most important of complaints; it is the most instructive diagnostic sign, for the study of its mechanism gives often the key to the best means for attaining relief. As Mackenzie further pointed out, the stomach, being an organ that daily makes itself known by sensations of pleasure or discomfort, forces its symptoms on all. In view of its highly complex organization it is a wonderfully long-suffering organ, for it not only digests food suitable for the whole organism but has to submit to improper food, to the gratification of gluttonous desires, and to the caprices of perverted tastes. Relief from alimentary pain presupposes a precise knowledge of the factors involved in its genesis. This is conspicuously true with reference to the pain of so-called peptic ulcers. How uncertain the beliefs have been is indicated in a recent review by Wilson [2] of the University of Toronto. He points out that such pain has been ascribed to irritation of exposed nerve endings in the ulcer base by the acid gastric juice, or to sensitization of the pain-producing mechanism in some way by acid. Mechanical irritation by coarse particles of food has also been assigned as a cause. Spasm of the pyloric sphincter or of the duodenal cap has been put forward by still other investigators. There are further variants to these interpretations. It is conceivable that the pain might result from an exaggeration of the normal hunger contractions; indeed, the term "hunger pains" is frequently employed in this connection both by patients and by physicians. However, Wilson ventures to summarize the views of the majority in two hypotheses: namely, that the pain is caused by "acid" or by muscle tension. Some authors have combined these by suggesting that acid causes hypertonus and pylorospasm, and have said that, in patients with true achylia, pylorospasm never occurs. In his own investigations on patients suffering from so-called duodenal ulcer associated with pain at the time of observation, Wilson found that filling the duodenal cap by manual pressure on the abdomen was followed almost immediately by relief from the pain. In most of these cases the gastric contents were strongly acid. It seems less likely, therefore, that any direct relationship exists between the acidity of the gastric contents and the

1. Mackenzie, James: Symptoms and Their Interpretation, New York, Paul B. Hoeber, 1913.
2. Wilson, M. J.: Duodenal Ulcer, Arch. Int. Med. 41: 633 (May) 1928.

occurrence of pain in patients with duodenal ulcer. The presence or absence of gastric peristalsis does not bear any relation to the occurrence of pain. Accordingly, Wilson concludes that the relief from pain is due to relaxation of the musculature of the caput, and, conversely, that the pain is due to overaction of the duodenal caput with or without abnormal local contraction or implication of the pyloric sphincter.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Philip H. Stephens, Los Angeles, chief surgeon, Union Pacific Railway, was elected president of the Pacific Association of Railway Surgeons at the annual meeting, San Francisco, August 25.

COLORADO

State Medical Election.—At the annual meeting of the Colorado State Medical Society, Colorado Springs, September 11-13, Dr. Samuel B. Childs, Denver, was installed as president; Dr. William Senger, Pueblo, was made president elect; Drs. William M. Shultz, Central City, Tom R. Knowles, Colorado Springs, Frederick E. Willett, Steamboat Springs, and Orland P. Shippey, Saguache, vice presidents; Dr. Frank B. Stephenson, Denver, secretary, and Dr. Leo W. Bortree, Colorado Springs, treasurer. Drs. Oscar M. Gilbert, Boulder, and John W. Amesse, Denver, delegates to the American Medical Association, and Byron B. Blotz, Rocky Ford, and Lewis H. McKinnie, Colorado Springs, alternates.

DELAWARE

Innovation in Treatment of Mental Cases.—The board of trustees of the Delaware State Hospital, Farnhurst, has decided to include as part of a twenty year building program an "observation clinic building," to be erected just outside the hospital grounds. The object is to provide a suitable place where mental patients can be received for observation and treatment by modern methods without being formally committed by the usual procedure to a hospital for the insane. Physicians frequently see cases which are obviously in need of proper care, although perhaps only temporarily, in a modern mental hospital, but they may hesitate to recommend the formal commitment of a patient to an institution for the insane. This building is to provide for such cases all the facilities of modern treatment. The twenty year program which the board has decided to arrange will also insure that each new unit erected from time to time will form a part of the ultimate complete and harmonious whole.

ILLINOIS

Chiropractor Brown Arrested.—Although convicted by a county court in June of practicing without a license, S. G. Brown, a chiropractor of Princeton, was arrested again in August, it is reported, and charged on forty counts with violation of the state medical practice act. He was fined $250 and costs at his original trial in June. A new trial was denied and his attorney gave notice of appeal to the supreme court. The counts in the new information before the court represent, it is said, violations of the medical practice act since Brown's previous trial.

KENTUCKY

Hospital News.—The Wilson Hospital, Pineville, is now known as the Pineville Hospital; Dr. Mason Combs has taken charge.

Personal.—The Fayette County Medical Society is reported to have protested against the removal of Dr. John S. Chambers of Lexington as medical director of the Kentucky House of Reform, Greendale, by the new superintendent of the institution, Mr. B. W. Hubbard.——Dr. Russell B. Howard has taken up the duties of full-time health officer of Bullitt County with headquarters at Shepherdsville.

MARYLAND

Typhoid Reaches Epidemic Stage.—Typhoid in Eastport, Anne Arundel County, has reached an epidemic stage in the opinion of the state health department officers. There are now thirty persons suffering from the disease, and the majority of the cisterns and wells in the village are contaminated. Immediate steps to lay a temporary main from Annapolis across the Annapolis-Eastport bridge to Eastport so that water from the Annapolis waterworks might be carried to the village have been taken, and the county officials have under consideration the installation of a sewerage system in Eastport.

Appointments at Johns Hopkins.—Mr. A. Brazier Howell, secretary of the American Society of Mammalogists, has been appointed lecturer in comparative anatomy at the Johns Hopkins Medical School. For the past six years Mr. Howell has been doing scientific work with the Biological Survey of the U. S. Department of Agriculture and the National Museum. Clarence E. Ferree, Ph.D., has been made resident lecturer in ophthalmology and director of the laboratory for physiological optics. His wife, Gertrude Rand, Ph.D., will be associate professor of ophthalmology. Other appointments include:

H. A. Abramson, instructor in medicine.
Henry L. Smith, instructor in clinical medicine.
Ernest L. Zimmermann, instructor in clinical medicine.
Charles D. Ryan, instructor in clinical neurology.
Alexander J. Schaffer, instructor in clinical pediatrics.
Lawson Wilkins, instructor in clinical pediatrics.
Sarah S. Tower, assistant in anatomy.
Morris H. Goodman, assistant in clinical dermatology.
Hugh Warren, assistant in gynecology.
Russell C. Grove, assistant in laryngology.
Benjamin May Baker, assistant in medicine.
James Bordley 3d, assistant in medicine.
Linn Cooper, assistant in medicine.
William Chrisman, assistant in clinical medicine.
John T. Howard, assistant in clinical medicine.
Frank R. Smith, Jr., assistant in clinical medicine.
Henry C. Smith, assistant in clinical medicine.
John H. Trescher, assistant in clinical medicine.
Robert V. Seliger, assistant in clinical neurology.
Thomas C. Wolff, assistant in clinical medicine.
Manfred Guttmacher, assistant in clinical neurology.
Edmund P. H. Harrison, assistant in obstetrics.
Henry F. Graff, assistant in clinical ophthalmology.
Roger D. Baker, assistant in pathology.
Arthur Koff, assistant in pathology.
Frank M. Jones, assistant in pediatrics.
Thomas Myers Palmer, assistant in pediatrics.
Thomas F. Daniels, assistant in clinical pediatrics.
Karl Ebeling, assistant in clinical pediatrics.
Porter S. Dickinson, assistant in psychiatry.
Gilbert Beck, assistant in psychiatry.
Maurice Levine, assistant in psychiatry.
Mildred T. Squires, assistant in psychiatry.
W. C. M. Scott, assistant in psychiatry.
Eldridge H. Campbell, Jr., assistant in surgery.
Grant E. Ward, assistant in clinical surgery.
Robert Gustafson, assistant in orthopedic surgery.
Howard C. Smith, assistant in urology.
Walter L. Denny, Jr., assistant in clinical urology.
Miriam F. Dunn, voluntary assistant in pathology.
Pearl M. Smith, voluntary assistant in pathology.
H. Hanford Hopkins, Charlton fellow in medicine.
Charles W. Fullerton, Jacques Loeb fellow in medicine.
Francis D. W. Lukens, Jacques Loeb fellow in medicine.
Donald McEachern, Jacques Loeb fellow in medicine.
Thomas I. Hoen, William Stewart Halsted fellow in surgery.
William M. Millar, William Stewart Halsted fellow in surgery.
Fred William Geib, fellow in surgery.
William C. Sullivan, fellow in plastic surgery.

MINNESOTA

Basic Science Law Retires Unlicensed Practitioner.—The new basic science law has brought about the retirement from practice of a "Dr." S. R. Kirby of New York Mills. Kirby, who is reported to have practiced for several years, has never graduated from a medical school or been licensed to practice as far as records in these headquarters indicate.

Personal.—Dr. Frank N. Allan, Rochester, was awarded the Starr silver medal at the June commencement of the University of Toronto for his thesis on "Studies on Carbohydrate Metabolism and Insulin."——Dr. David E. McBroom, senior physician at the School for Feeble Minded, Faribault, has been appointed superintendent of the epileptic colony at Cambridge to succeed Guy C. Hanna.

Increase in Mental Patients.—The first admissions to the state school for feebleminded and the state colony for epileptics during 1927 totaled 263, as compared to 197 in the year 1922, according to a census of mental patients made by the U. S.

Department of Commerce with the cooperation of the state department of public institutions. The increase in the number of first admissions between 1922 and 1927 was relatively greater than the growth in the state's population during that period. The total number of patients present in both institutions, Jan. 1, 1928, was 2,033, compared with 1,194, Jan. 1, 1910, and during this period the ratio of such patients per hundred thousand of general population increased from 57.5 to 75.1. Of the patients present in these institutions, Jan. 1, 1928, the males amounted to 1,000 and the females to 1,033.

MISSOURI

Clinical Conference.—The sixth annual fall conference of the Kansas City Southwest Clinical Society will be held October 9-11. The meetings will include operative clinics each morning, round table luncheons, scientific and technical exhibits, and evening sessions with set addresses.

MONTANA

State Medical Election.—At the annual meeting of the Medical Association of Montana, Yellowstone National Park, August 27-29, Dr. Edward M. Gans, Judith Gap, was made president elect, and Dr. Alfred Karsted, Butte, president. Dr. Elmer G. Balsam, Billings, was reelected secretary. The next annual session will be at Great Falls, July, 1929.

NEVADA

State Medical Meeting.—The twenty-fifth annual session of the Nevada State Medical Association will be held in Reno, September 21-22, under the presidency of Dr. William M. Edwards, Yerington. The headquarters will be at the Hotel Golden. The secretary is Dr. Horace J. Brown, Reno.

NEW HAMPSHIRE

First Clinical Session.—The first clinical meeting of the New Hampshire State Medical Society was held at Hanover, September 5-6. The program included a symposium on the use of liver abstract and several papers on jaundice, infantile paralysis and other subjects. Opportunity was afforded to visit the various departments of Dartmouth College, the Mary Hitchcock Hospital and Dick Hall House.

NEW YORK

Child Guidance.—A course in child guidance consisting of lectures and clinical demonstrations was given by the department of mental hygiene of the state of New York at the Medical Center, Columbia University amphitheater, during the week of September 10.

New York City.

Special Clinic for Vaginitis in Children.—In cooperation with the Bellevue-Yorkville Health Demonstration, the department of health of New York City has opened a special clinic for the study and treatment of vaginitis in children. Dr. Walter M. Brunet, who has just been appointed attending gynecologist to the Willard Parker Hospital, will direct the clinic and also the service at the hospital. The special clinic is located in the Bellevue-Yorkville Demonstration Building, 325 East Thirty-Eighth Street.

Decrease in Deaths from Sunstroke.—New York has long been a sufferer from sunstroke and still is, but there has been a gradual decline in the number of deaths from that cause for more than twenty-five years, according to a special writer in the New York *Times*. It appears that the largest number of deaths from sunstroke occurred in the two years 1896 and 1901. From Aug. 6 to Aug. 13, 1896, 671 persons died of sunstroke and prostration on Manhattan Island, and from June 30 to July 6, 1901, these causes were responsible for 724 deaths. In comparison, from August 4 to 11, 1928, when the city was sweltering, the total number of deaths from sunstroke and prostration was twenty-six. With the increase in population the number of deaths this year would have been many times more than actually were reported had there been the same rate that prevailed about twenty-five years ago. There have been a number of theories advanced as to the cause of the decline in cases of sunstroke but none of them apparently have been fully substantiated by scientific investigation. Some theories are the substitution of electricity for steam power, better sanitary and working conditions in offices and factories, more public and private baths, more sensible attire for both sexes, shorter hours of labor, the general use of refrigeration, better knowledge of dietetics and increased intelligence in self-care and preservation, and, lastly, the introduction of the automobile which permits people to go to cooler places during these extremely hot periods. During the two worst years noted, 1896 and 1901, the thermometer registered from 90 to 100 degrees at 4 o'clock in the afternoon, it is said, day after day, and with excessive humidity, and on the day of the greatest deaths from sunstroke, July 2, 1901, the temperature was 100 degrees.

Virgil Pendleton Gibney Memorial Fellowship of the Hospital for Ruptured and Crippled.—Through the generous contributions of the alumni and friends of the Hospital for Ruptured and Crippled, a fellowship has been established which will be known as the Virgil Pendleton Gibney Memorial Fellowship. The income from this fellowship will be approximately $1,500 a year, and the incumbent thereof will have the privilege of boarding and residing at the hospital. The idea of the fellowship is to afford an opportunity to a man who is well grounded in general surgery, and who has had a certain amount of experience in orthopedic surgery, to pursue further study in the latter field, especially in that of bone pathology. The incumbent will have every opportunity for clinical study in both the indoor and outdoor departments of the hospital. He will have the privilege of carrying on laboratory investigations at Cornell University Medical College under the direction of the heads of the departments, and also will have an opportunity to study the pathology of bone tumors under the direction of Dr. James Ewing of the Cornell and Memorial Hospital laboratories. After a period of not exceeding three months, the incumbent shall decide on some particular line of study and investigation to which he intends to devote the major portion of his time. At the end of one year, or of the period during which he has held the fellowship, he shall present to the committee in charge a thesis which will be published as coming from the Hospital for Ruptured and Crippled and the Cornell University Medical College laboratories with the approval of the committee. The committee in charge of this fellowship consists of the following: Mr. William Church Osborn, president of the board of managers, and Drs. Samuel Fosdick Jones, Denver, Eugene H. Pool, Royal Whitman, Charlton Wallace and William B. Coley, chairman. Any one desiring to apply for this fellowship will please communicate with Dr. William B. Coley at the Hospital for Ruptured and Crippled, 321 East Forty-Second Street, New York.

OHIO

Personal.—Dr. Alexander J. M. Webb of the Hamilton Hospital, Hamilton, Ont., Canada, has assumed charge of the department of children's diseases at the Schirrman Hospital, Portsmouth. —— Dr. Marshall M. Best, Xenia, has been appointed to the Greene County Children's Home.

Increase in Mental Patients.—A census of mental patients in the eight state hospitals of Ohio made by the U. S. Department of Commerce with the cooperation of the state department of public welfare shows that these hospitals had 3,300 first admissions during the year 1927, as compared with 2,708 in 1922. The increase in the number of first admissions between the years 1922 and 1927 was relatively greater than the growth in the state's population. Patients under treatment in Ohio state hospitals have increased steadily in number from 9,088, Jan. 1, 1910, to 14,360, Jan. 1, 1928, and the ratio of such patients per hundred thousand of general population increased from 190.6, Jan. 1, 1910, to 212, Jan. 1, 1928. Of the patients present on the latter date, 7,627 were males and 6,733 were females. The figures for 1927 and 1928 are preliminary and subject to correction.

Commercial Organization Desires to Enter Toledo.—The Bulletin of the Toledo Academy of Medicine states that a commercial organization for the treatment of venereal diseases desires to enter Toledo and establish a local business. This organization seems to resemble and, it is said, to be a branch of the Public Health Institute of Chicago. It offers to treat these diseases for a low nominal sum based on the cost of treatments used and the patient's ability to pay. The academy considers this an example of "more paternalism," and that one of its disadvantages would be so to limit the work of physicians duly qualified to treat those diseases as eventually to drive them out of Toledo by unfair competition. The profession and the public alike would suffer should a public health institute be introduced into Toledo.

Cincinnati's Health Center.—More than a year ago the health center, maintained by the Cincinnati Department of Health, at 934 Clark Street, took over the whole building in which previously it had occupied only the first floor. According to *Cincinnati's Health*, the center represents a fine expression of interdepartmental cooperation. Persons of very limited means come here for examination, observation and treatment. There is a diagnostic chest clinic, a dental department, a children's service and a venereal disease department. During 1927, 2,282 patients were admitted to the tuberculosis clinic; most of them were new patients, and among the latter eighty-two were found to have tuberculosis. The preventive program is carried on through open-air classrooms in the public schools and a summer camp operated by the Anti-Tuberculosis League. The former will accommodate 125 children, who are selected by the district physicians from the underweight group or contacts but do not have tuberculosis.

Illegal Practitioners Prosecuted.—The state medical board recently assisted in the prosecution of the following persons for violation of the state medical practice act:

P. C. Norton and J. T. John, Hardin County, for advertising and announcing themselves without a certificate. Fined $25 and costs.
Frank Geuth, cancer quack; W. C. Gauld, D. A. Stemen and J. G. Klein, unlicensed chiropractors, Defiance County. Fined $25 and costs.
J. T. Adams, Allen County, for opening and conducting an office without a certificate. Fined $200 and costs, which were suspended on condition that he cease practice.
C. E. Moran, unlicensed chiropractor, Van Wert County, for advertising and announcing. Fined $100 and costs.
W. L. Roller and J. C. Singleton, Findlay, unlicensed chiropractors. Fined $50 and costs. Suspended on promise to quit.
J. C. Bates, Ethel P. Bates, E. E. Mizer, Alfred F. Schatl, Alexander Morrison, Nellie I. Morrison, Ada M. Hudson, F. W. Phipps and Chief Reymont, Tuscarawas County. Fined $100 and costs. Suspended on agreement to cease practice until qualified.
F. J. Hopkins and W. H. Morgan, unlicensed chiropractors, Cleveland municipal court, for advertising and announcing. Fined $25 and costs.
Frank Forowicz, Columbiana County. Fined $25 and costs.
G. H. Lensgraf and J. A. Loop, Miami County, for advertising and announcing without a certificate. Sentence not yet imposed.
Paul L. Hook, unlicensed chiropractor, Piqua municipal court, for conducting an office without a certificate. Fined $300 and costs.
W. L. Shafer and I. J. Wetzel, unlicensed chiropractors, Darke County. Fined $100 and costs. Suspended on promise to cease practice.
A. J. Fitzgerald and John Knill, unlicensed chiropractors. Fined $25 and costs.
E. J. Bryant, Bellefontaine, Logan County, for advertising without a certificate. Fined $25 and costs.
D. O. Watts, H. B. Whitesell and E. W. Sheward, Wood County. Fined $50 and costs.
W. B. Steel, Sylvia Morron, G. W. Hall, unlicensed chiropractors, East Liverpool. Fined $50 and costs. Suspended on promise to quit.
H. W. Crawford, unlicensed chiropractor, East Liverpool. Fined $50 and costs.
S. F. Choler, against whom a warrant was issued, left county and case was continued.
L. C. Hart, J. Harry Craig, Richland County. C. O. Thorson, B. P. Lash, G. Armold, E. Ambrose Hart and C. V. Gates were fined $50 and costs.
J. J. Bolender, Champaign County. Sentence not yet imposed.
L. Wolworth, Mansfield, pleaded guilty to opening and conducting an office. Assessed costs after agreeing to cease practice until qualified.

PENNSYLVANIA

Chiropractor Paroled.—G. T. Bell, a chiropractor of Masontown, was sentenced to the Fayette County Jail for several months and fined $400, July 24, it is reported for practicing without a license. Bell was paroled, August 1.

Decrease in Death Rate.—During 1927, the death rate for Pennsylvania was 1,143 per hundred thousand of population as compared with 1,254 in 1926, according to the U. S. Department of Commerce. The decrease was accounted for largely by lower death rates for pneumonia, influenza, diarrhea and enteritis, measles, tuberculosis, nephritis, whooping cough and heart disease; 1927, however, showed an increase of deaths from automobile accidents from 18 per hundred thousand in 1926 to 19.

Philadelphia

Symposium on Chemotherapy.—A symposium on chemotherapy will be held at the Philadelphia County Medical Society, Twenty-First and Spruce streets, September 26. The following papers will be presented: "The Principles of Chemotherapy with Special Reference to the Mechanism of Toxic and Curative Activity of Chemical Agents" by Dr. John A. Kolmer; "Drugs as Antigens," Dr. George Harlan Wells; discussers: "From the Viewpoint of the Obstetrician," Dr. Barton C. Hirst; "From the Viewpoint of the Internist," Dr. Solomon Solis-Cohen; "From the Viewpoint of the Surgeon," Dr. William Bates, and "From the Viewpoint of the Syphilologist," Dr. Joseph V. Klauder.

One Million Dollar Clinic Started at University of Pennsylvania.—With 200 officials and friends of the University of Pennsylvania attending, Martin Maloney, philanthropist and capitalist, of Spring Lake, N. J., September 13, turned the first spadeful of earth for the third important building which has been added to the medical equipment of the university within the last year. The Martin Maloney Memorial Clinic Building of the University Hospital will be erected at a cost exceeding $1,000,000 at Thirty-Sixth and Spruce streets, adjoining the University Hospital main building. It constitutes the first unit of the extensive plans for the modernization and expansion of the hospital and, by permitting the concentration of a number of important clinics, will provide the university with one of the finest medical plants of its kind. Early last fall the university opened its $2,000,000 teaching hospital of the Graduate School of Medicine, and the $1,000,000 Laboratory of Anatomy and Biochemistry is rapidly reaching completion. The Martin Maloney Memorial Building will be nine stories high, of red brick and Indiana limestone, decorated with terra cotta. In style of architecture it will be English collegiate, treated in a somewhat modern fashion. It will have a frontage on Spruce Street of 100 feet and will extend 157 feet south of Spruce Street. A five-story connection building will link it with the main building of the hospital. The sixth floor will be devoted to the Eldridge R. Johnson Foundation for research in medical physics, which was made possible by a gift of $800,000 to the university by the former president of the Victor Talking Machine Company. The Robinette Foundation for the study, treatment and prevention of diseases of the heart and circulatory system, established through the generosity of Edward B. Robinette, alumnus and investment banker, will also be included in the building. Mr. Maloney, who for his many philanthropies was created a marquis by Pope Leo XIII, presented $250,000 to the university some time ago and has made subsequent gifts. The building will be completed in about a year.

SOUTH DAKOTA

State Medical Election.—At the recent annual meeting of the South Dakota State Medical Association, Hot Springs, Dr. Nelson K. Hopkins, Arlington, was elected president; Drs. Lorenzo N. Grosvenor, Huron, Percy D. Peabody, Webster, and Willard A. Bates, Aberdeen, vice presidents; Dr. John F. D. Cook, Langford, secretary-treasurer (reelected for three years), and Dr. Theodore F. Riggs, Pierre, delegate to the American Medical Association. The next annual meeting will be at Mitchell.

WASHINGTON

State Medical Election.—At the annual meeting of the Washington State Medical Association, Seattle, August 27-30, Dr. Frederick H. Brush, Yakima, was elected president, and Dr. Curtis H. Thomson, Seattle, secretary. The next meeting will be at Yakima, 1929.

WISCONSIN

Unusual Diphtheria Record.—Not a single case of diphtheria was reported in the state of Wisconsin for the week ending September 1, according to a report made to the U. S. Public Health Service by Dr. Cornelius A. Harper, Madison, state health officer of Wisconsin. Dr. Harper says: "This is of special interest from the fact that in 1881, five years after the state board of health was organized, with the population of the state only half of the present population, there were 2,202 deaths from diphtheria. If the real facts were known, on account of the indefinite records of that period, at least another thousand deaths could be added to this number."

WYOMING

Personal.—Dr. Stephen O. Watkins is reported to have resigned as superintendent of the Wyoming Tuberculosis Sanatorium, Basin, on account of ill health.

GENERAL

Inter-State Post Graduate Medical Association of North America.—The annual session of this organization will be held in Atlanta, Ga., October 15-19, under the presidency of Dr. Lewellys F. Barker, Baltimore. The program includes the usual entertainments, clinics and papers by many American physicians and invited foreign guests. On October 19, the

session will close with a banquet including "addresses by distinguished citizens of the world."

Society News. — At the recent annual meeting of the National Medical Association, Baltimore, Dr. Lightfoot A. West, Memphis, Tenn., was made president elect; Dr. Thomas Spotuas Burwell, Philadelphia, president; Dr. William M. Thorne, Charleston, S. C., vice president; Dr. Walter G. Alexander, Orange, N. J., secretary, and Dr. J. R. Levy, Florence, S. C., treasurer.——The next meeting of the American Academy of Physiotherapy will be held at the Pennsylvania Hotel, New York, October 19-20.

Information for American Medical Directory.—During the month of August the biographical department of the Association sent out 150,718 directory information cards to the physicians in the United States requesting certain information to be used in compiling the eleventh edition of the American Medical Directory, which is now being prepared in the biographical department of the Association. Physicians are urged to fill out and return the stamped card regardless of whether or not a change has occurred in the information specified. To date only one third of these cards have been returned and the work on the directory is rapidly proceeding. The directory is published in the interest of the medical profession and contains valuable and authentic data concerning physicians, hospitals, organizations and medical activities. It has established itself as one of the most significant of the altruistic efforts of the Association, becoming of more and more importance as a source book of statistics on the profession. Should a change of address occur after the information card has been returned, physicians are requested to notify the biographical department immediately.

Annual Session of College of Surgeons.—The American College of Surgeons will hold the eighteenth clinical congress in Boston, October 8-12. An innovation this year will be the commencement of the clinics in the Boston hospitals on Monday afternoon, continuing through the mornings and afternoons of the following four days. Monday evening's program will include an address of welcome by the local chairman, the address of the retiring president, Dr. George D. Stewart of New York, the inaugural address of the new president, Dr. Franklin H. Martin, Chicago, and the John B. Murphy oration on surgery by Prof. Vittorio Putti of Bologna, Italy. At the Wednesday evening meeting, the visiting surgeons will be the guests of the Boston Surgical Society at a special meeting, when the Bigelow medal is to be awarded. On Friday evening the annual convocation of the college will be held in Symphony Hall, when the 1928 class of candidates for fellowship in the college will be received. The fellowship address on this evening will be delivered by Dr. William J. Mayo, Rochester, Minn. The annual meeting of the governors and fellows will be held Friday afternoon and will be followed by a symposium on cancer. Friday morning an open forum will be held on traumatic surgery, to be followed in the afternoon by a symposium on traumatic surgery which will be participated in by leaders in industry, labor, indemnity organizations, and the medical profession. Ether Day will be celebrated in the Dome Room of the Massachusetts General Hospital on Friday, when a bronze bust of William T. A. Morton will be presented to the hospital. The chairman of the Boston committee on arrangements is Dr. Frederic J. Cotton. Among the distinguished guests and visitors from abroad will be Dr. Daniel J. Cranwell, Argentina; Sir Charles P. B. Clubbe and Sir George A. Syme, Australia; Sir Charles Ballance and Sir Samuel Squire Sprigge, England; T. de Martel, France; Prof. Vittorio Putti, Italy; Ulises Valdes, Mexico; Archibald Young, Scotland, and Sir John Lynn-Thomas, Wales.

Annual Report of United Fruit Company.—In the annual report of the medical department of the United Fruit Company, which conducts hospitals and dispensaries in Central American countries, malaria is said to be the major problem. Measures instituted in the previous year to control malaria have been effective in all districts where they have been thoroughly applied. In addition to controlling mosquitoes about habitations, an effort was made to cure malaria carriers by means of a combination treatment of quinine and plasmochin. The latter drug, the medical director states, is effective in clearing the peripheral blood of gametocytes. The drug is toxic in large doses over a long period, but, with two years' experience it is believed that the use of plasmochin can be extended to the treatment of camp cases in effective doses without causing serious results. This, it is said, promises to be the most important discovery for malaria control that has been made since quinine was introduced. In a hospital in Guatemala, several hundred cases of malaria were treated with plasmochin. It was found that when administered in combination with quinine, its toxic tendencies seem to diminish. The report gives a full discussion of the treatment of malaria with plasmochin and quinine with many brief case reports. The total number of cases of malaria treated during the year in the hospitals of the eight divisions of the company, apart from Jamaica, where the company does not operate a hospital, was 7,986, a reduction of about 28 per cent over the number treated in the previous year. Pneumonia caused more deaths than any other single infection in the tropical divisions. The mortality rate of lobar pneumonia in 329 cases treated was 35.8 per cent. The company treated ninety-two cases of typhoid, with a mortality rate of 17 per cent. There were sixteen cases of paratyphoid with two deaths. The cases of amebic dysentery treated numbered 424 with a mortality of slightly more than 1 per cent. Thirty-one cases of beriberi were admitted as compared with sixteen cases in the previous year. The general manager of the medical department, Dr. William E. Deeks, New York, states that no infectious disease assumed epidemic proportions and no quarantinable disease developed in any of the divisions.

CANADA

Canadian Public Health Association Meeting. — The annual session of the Canadian Public Health Association will be held under the presidency of Dr. George D. Porter, Toronto, in Winnipeg, October 11-13. The headquarters and meeting places will be in the Royal Alexandra Hotel. The program includes addresses in every field of public health, both technical and relating to public welfare. A business session will conclude the meeting.

FOREIGN

Record Low Birth Rate.—The complete vital statistics for 1927, according to the New York *Times*, show that the lowest British birth rate on record was for 1927, when it was 16.6. The lowest birth rate on record previous to that time was 17.7 in 1918. The death rate in 1927 was 12.3, slightly higher than in any year since 1922. The rise is said to have been due chiefly to an epidemic of influenza, which was the greatest since the pandemic of 1918 and 1919. Suicides made a new record also in 1927, the rate having been 125 per million as compared with 96 three years ago. Deaths from railway and automobile accidents were also increased.

International Society of Medical Hydrology. — The annual meeting of this society will be held, October 9-17, at London, Harrogate, Buxton, Droitwich and Bath, England. There will be a reception at the Royal College of Physicians, following a visit to the House of Commons, a reception by the Buxton Medical Society, demonstration of rheumatic cases in the hospital at Harrogate, and a reception by the mayor of Bath, in addition to papers and conferences on hydrotherapy and mineral waters. The meeting is open to members without fee. Some nonmember physicians and ladies can be accommodated, for whom the fee will be £1 each. The address of the chairman of the council, Dr. Robert F. Fox, is 139 Marylebone Road, London, W. 1.

Report of College of Physicians of Edinburgh. — Twenty-four workers have been engaged in research under the auspices of the College of Physicians of Edinburgh during the year 1927, according to the last annual report. Among other things, the work on taurine, the report states, does not afford much confirmation of Takeoka's assertion that the drug is likely to be of high value in the treatment of tuberculosis. Work on the mathematical theory of contagious epidemics has made progress. It appears, for example, from theory that the curve of an epidemic in a community of susceptible persons whose density of population is near the threshold value with relation to the particular disease should be symmetrical, whereas, if the density is far removed from the threshold value, the curve should show a slow rise, followed by a sharp fall. Other work is briefly reviewed in the report, some of which is of more clinical character. During the annual meeting of the British Medical Association in July, the activities of the laboratory were exhibited in the pathologic museum.

CORRECTION

Infant Mortality Rate of Alameda, Calif. — In THE JOURNAL, Aug. 18, 1928, p. 502, the statement was made that Summit, N. J., representing cities of low population, had an infant mortality rate of 0.15. Dr. A. Hieronymus, health officer of the city of Alameda, Calif., calls attention to the fact that Alameda had a rate of 0.11, the lowest of any city in the United States.

Government Services

U. S. Veterans' Bureau

The total number of persons receiving medical treatment through the U. S. Veterans' Bureau was 26,384 on June 30, 1928. This is an increase of 692 patients as compared to the year 1927. This number includes patients divided as follows: tuberculosis, 6,718; neuropsychiatric, 13,099; general medical and surgical, 6,567. There was a slight decrease in the number of tuberculous patients as compared to the year of 1927 and a material increase in the number of neuropsychiatric patients as well as general medical and surgical patients. The foregoing facts are contained in a report made by director of the U. S. Veterans' Bureau, Frank T. Hines, to the director of the federal budget.

Tuberculosis Among the Indians

The bureau of Indian affairs of the department of the interior is making a survey of tuberculosis among the Indian population of the United States. The bureau has addressed a letter to superintendent and physicians, Indian Service, accompanied by a questionnaire, calling for data to determine the extent of the prevalence of tuberculosis among Indian school children. It is planned that a survey will be extended to cover adult Indians at a later time. The questionnaire calls for information as to the number of Indians now in sanatoriums, the number of children ineligible for school because of tuberculosis, and numerous other factors, which will bring out points of value to the government officials for the care and treatment of this disease among Indians.

Veterans' Hospital Formal Opening

The formal opening of the new hospital for mental patients constructed by the U. S. Veterans' Bureau at Northport, L. I., occurred, August 2. The program included an invocation by the Rev. Walter F. Hoffman, chaplain, American Legion Department of New York City, which was followed by an address by Brig. Gen. Frank T. Hines, director of the U. S. Veterans' Bureau, who spoke on "The Work of the Veterans' Bureau." The director expressed his appreciation of the cooperation which the bureau had received from the Department of Mental Hygiene of New York City in caring for bureau beneficiaries. Col. Theodore Roosevelt spoke on "The Ex-Service Man"; Mr. Millard W. Rice, national commander, Disabled Veterans of the World War, on "Helping the Disabled Veterans to Help Themselves"; Col. F. Trubee Davison, Assistant Secretary of War for Aeronautics, on "National Defense," and Mrs. August Belmont of the Central Committee of the American Red Cross, on the "American Red Cross in the Hospital." Hon. Royal S. Copeland, U. S. Senator, spoke on "The Hospital in the Public Service," and benediction was pronounced by the Rev. Ulrick O'S. Buckley of Northport, L. I. Music by an orchestra and vocal selections were dispensed through the program. The medical officer in charge, Dr. George F. Brewster, presided and introduced the speakers. At the close of the exercises visitors were escorted through the various buildings of the hospital. This hospital has a capacity of 1,000 beds and is well located on a large reservation on the north shore of Long Island. The twenty-one buildings are arranged in a quadrangle. They are connected by covered passages, are fireproof and top a 500 acre park, heavily wooded and commanding a superb view of Long Island Sound and the Connecticut shore line. Electrical devices, baths of every sort, and complete equipment for the practice of the tested methods of physical therapy are provided. All phases of the hospital's activities are correlated to insure convenience and efficiency in operation. Nearly all the large ward rooms have natural light and ventilation on three sides. There are wide porches at the end of every wing. Oil is used for fuel. It is delivered from the railroad by gravity. In one wing of the infirmary building, where it would be inadvisable to have radiators, because patients who are irresponsible might somehow harm themselves, heating will be accomplished by the distribution of air previously heated by passing it through steam coils in the basement. Construction of the hospital was started in 1926. The buildings and land cost approximately $4,000,000, and the work was completed last November. The library of 4,000 books was opened recently and is located in the medical administration building.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 24, 1928.

Plague and Climate in India

In a paper published by the Royal Society based on the statistics of thirty years, meteorological records, and the work of many commissions and individual investigators, Sir Leonard Rogers has shown that the susceptibility of fleas to climatic conditions is reflected in the statistics of plague. The slums of great cities like Bombay or Calcutta, with their close-packed populations and endless communications between house and house, are ideally favorable foci of plague, as they are both for rats and for fleas. On the other hand, districts where the human population is scattered, and where, as in Bihar, the houses are flimsy and thin-walled with no harborage for rats, have the lowest incidence of plague. Temperature has a direct influence on the rat population, for when there is a low mean temperature of 50 F., infected rats often die before plague bacilli appear in their blood, so that their fleas have no chance of becoming infected. There are two plague-carrying rat fleas, *Xenopsylla cheopis* and *X. astia*, which have been distinguished only recently. The latter is the more common in Lower Bengal, Assam, and a large part of the Madras Presidency; it is a much less efficient carrier of the bacillus, and hence plague is nearly absent from these territories, except in the immediate neighborhood of Bombay and some heavily infected territory in Mysore, although the climatic conditions are favorable. *Xenopsylla cheopis* is abundant wherever plague is epidemic or is capable of becoming epidemic. Temperature and humidity affect fleas when separated from their hosts. High temperature and low humidity are unfavorable to both the rate of multiplication and the length of life of the fleas. Dry cold and dry heat both shorten their lives and interfere with their multiplication. Hence a fall in the incidence of plague is to be expected in a dry cold season, and also in a dry hot season. But a complication arises when rats and their fleas find a refuge in human habitations during the cold season. Dryness is a more effective agent in repressing fleas. In Poona, on the Deccan plateau of western India, the life of fleas was found to be five times as great in August when the relative humidity was 80 per cent and plague was at its height, as in April and early May, when the relative humidity was 45 per cent and plague was at a minimum. Sir Leonard Rogers has worked out the yearly variations in plague in India in relation to climatic variations. He shows that the seasonal incidence of plague in different areas can be explained by the variations in temperature and humidity which affect the life of plague fleas. In some cases prediction is possible. In the more severely affected areas of northwest and central India and the Deccan plateau, the mean monthly temperature variations in the hot weather and monsoon periods influence the subsequent plague incidence, high temperatures reducing and low temperatures favoring. In the three northern plague areas of the Punjab, the United Provinces, and Bihar, four of the six important seasonal climatic factors become evident before the regular annual rise of plague in December and thus allow the yearly increases and decreases to be forecast.

Public Health Congress

More than 300 delegates from all parts of the world assembled at the inaugural meeting of the Royal Institute of Public Health congress, which was held in Dublin. Mr. Richard Mulcahy, minister for local government and public health, in his presidential address said that in Ireland the general effect of the public health acts had brought about an improved social life. Typhus fever had virtually disappeared, and it might

be safely anticipated that typhoid, which furnished perhaps the most important index of sanitary progress, would in the near future become almost as rare. A review of the progress made toward solving the problem since 1911 showed that the deaths from tuberculosis were nearly 50 per cent fewer. The rise in the incidence of mortality from cancer, however, was a grave matter. The death rate among women at childbirth was regrettably high, notwithstanding the increasing application of measures for the regulation of midwifery practice.

Maternity and Child Welfare

Dr. Louise McIlroy (professor of the obstetric and gynecologic unit at the London School of Medicine for Women), in her presidential address to the maternity and child welfare and school medical inspection section of the congress, said that obstetric work was the basis of strength, but it was too localized. Municipalities and governments should give grants to enable the work to be carried on so that every woman living in the remotest part of the country could receive its benefits. The work of the x-ray specialist in the antenatal clinics was among the important advances in obstetrics.

THE CONTROL OF MILK AND FOOD

Dr. Gerald Leighton (Scottish Board of Health) said that traders concerned with the use of chemicals had tried to induce the public to believe that chemical preservatives were necessary in mince meats and cream. It was ridiculous to contend that fresh meat must be so treated, and cream could be marketed quite well otherwise. It was in the direction of fixing legal standards for foods that there was the greatest need for future food legislation. There was much room for improvement in the method of handling and transporting food, and there was a great need for the introduction of properly refrigerated vans for the carrying of perishable foods, such as milk and meat.

VILLAGE SETTLEMENTS FOR THE TUBERCULOUS

Dr. P. C. Varrier-Jones, medical director of the Papworth Village Settlement, said that in 75 per cent of the patients now sent for treatment to sanatoriums complete cure was out of the question. The popular opinion, built on certain observations of pathologists in laboratory work, that tuberculosis was a fairly curable disease did not stand the test of clinical results. Present methods might succeed in relieving "early" cases, but the majority of cases were not diagnosed until the disease had made considerable progress. How different was the picture of the treatment of early tuberculosis from that observed in a tuberculosis dispensary, where seriously injured patients were crowded together, waiting for a cure which never came, supported by small doles of food and medicine which prolonged a pathetic and fruitless existence with nothing but failure and disappointment at the end of it. Little or no effort was made to provide conditions permanently suitable for the patient's relief, and for the most part he was left to drift. The system of tuberculosis dispensaries and sanatoriums as now carried on, was founded on a wrong reckoning. "I had been taught," Dr. Jones said, "that a consumptive should obtain a little job in the open air and have good food and live carefully and rest often, and I reiterated this advice; yet little success attended my efforts. The general condition of the patients grew worse than it was before they were sent to the sanatorium. 'How can I buy good food in abundance on $2½ a week?' asked one. 'How can I find a part-time job when healthy men are unemployed?' asked another. And I woke up to the fact that the advice I had been giving was utterly unsuited to the mass of working men and women who cannot afford to be consumptive." It was because our sanatoriums were filled with patients in whom no permanent arrest of the disease could be expected that village settlements were called for. They were necessary for the very patients who found it impossible to obtain employment in the outside world, and who daily crowded the dispensaries in the large cities. The crux of the question was the provision of suitable employment under sheltered conditions, with facilities for treatment when required. Village settlements could offer good conditions for permanent work and chances of promotion as well to consumptives.

PUBLIC AUTHORITIES AND RESEARCH

Dr. James M. Beattie, professor of bacteriology in the University of Liverpool, in his presidential address to the bacteriology, pathology and biochemistry section, said that the greater number of local authorities in Great Britain and Ireland did virtually nothing to encourage research. From the medical point of view, research must be mainly in relation to public health. The research that was being done was largely financed by private individuals, or by universities and colleges which could ill afford the money. He did not deprecate the work done under the direction of the ministry of health and the ministry of agriculture in Great Britain, but what he did deprecate was that by the establishment of such central institutes only a limited number of tracks were blazed, while there were numbers of men willing to undertake research work if they had the opportunity. Then, instead of one investigator planning a special line of attack, they would have a dozen men planning a dozen lines, with considerably increased probability of success. He thought that it would be a good thing if the medical journals could be suppressed for a few years, so that much of the undigested literature of today might find its way into the waste paper basket before and not after publication.

MILK BOTTLES AND DISEASE

Dr. E. G. Gibbs Smith, health officer of Teddington, and F. T. G. Hobday, principal of the Royal Veterinary College, London, in a joint paper, said that the great majority of people were now receiving milk far more liable to contamination than it had been by the old method. Authorities should be given power to condemn unsuitable storage and delivery vessels. There should be a destructible retainer for retail delivery which would do away with bottle-cleaning difficulties. If used at all, bottles should be of a standard shape, and all bottles and containers should be capped in such a way as to make it easy to remove the cap without any dirt entering the bottle. The health authorities should not let the pecuniary interests of large distributors stand in the way of the abolition of any method of milk distribution which either does or is likely to jeopardize the health of the community.

Decline of the Child Population of London

A continuous fall in the birth rate of London since 1921 is shown in the annual report of the London County Council. Although the population has remained at about 4½ millions, the child population has decreased considerably, the proportion under 15 having fallen from 30 per cent in 1901 to 26 per cent at the last census. On the other hand, the proportion of persons over 35 has increased from 32 per cent to 40 per cent. "There is no sign of arrest in the accelerated rate of decline in births," says the report, "and, assuming the present decrease both of births and of infantile mortality to continue until the next census, the children under 15 will then form less than 20 per cent of the total population, while the proportion at higher ages will still further be increased. The effect of these changes in the age constitution of the population upon housing requirements in London is to increase the demand for tenement and part-houses. Assuming that the number of married and widowed women may be taken as a broad indication of the number of family units, there has, since 1901, been an increase in the number of units of over 110,000 in a practically stationary population." The births in London during 1927 numbered 73,263, as compared with 78,825 in the preceding year. The birth rate was 16.1 per thousand, as against 17.1 for 1926 and 17.9 in 1925. The lowest birth rate recorded in London was that for 1918, when the effects of the war were at their

maximum. In that year there were 70,976 births, this being only 2,287 less than in 1927. In the last quarter of 1927 the births fell below the lowest number recorded for this quarter even during the war. The decrease in the number of births in London since 1921 has averaged about 4,000 annually. In 1901, when the population was about the same, the births exceeded those of last year by 57,829.

Medicine and the Airplane

Sir Samuel Hoare, secretary of state and president of the air council, after presenting prizes at the London Hospital Medical College, said that no profession in the world demanded a higher standard of physical and nervous efficiency than flying. As the Royal Air Force had developed, the old tests which had proved sufficient for the army and navy were outdistanced, and it was soon evident that the man whom the insurance companies would call a first-class life was by no means necessarily a good pilot. Other tests had to be superimposed, and the medical officers of the air force had accordingly gone to work in a special way. Instead of merely ascertaining that a candidate for a commission was free from any obvious disability or disease, they had worked out some special tests for the efficiency and coordination of brain, eye, hand and foot. The medical tests applied to candidates were confirmed in a remarkable degree by reports received afterward from the units to which the officers were sent. Sir Samuel Hoare referred also to the airplane as an instrument of first aid. During some recent military operations in a difficult mountainous region of Kurdistan, about 100 men fell ill with dysentery. Thanks to the air force every one was swiftly transported to a hospital at Bagdad—an operation which otherwise would have involved days of painful journeying—and they all completely recovered. The airplane was specially well adapted for ambulance purposes. Some of the fastest airplanes were now being equipped so that they could easily accommodate stretcher cases.

Outbreak of Paratyphoid in London

In the course of a fortnight, 100 cases of paratyphoid fever have occurred in London and certain adjoining country areas. The relatively small number of cases in proportion to the population suggests that the cause is local; geographic distribution is, however, proportionately wide and careful inquiries are being made by the ministry of health as to the source of infection. In certain districts, cream or possibly milk has come under suspicion. The outbreak has occurred so suddenly that it cannot yet be said how many persons are affected.

PARIS

(From Our Regular Correspondent)

Aug. 7, 1928.

The Crusade Against Tuberculosis

The crusade against tuberculosis is being carried on systematically in France. M. Calmette is promoting a campaign in favor of the immunization of the new-born by means of the B C G vaccine. The superior council of the Office national des pupilles de la nation recently held a meeting at the headquarters of the ministry of public instruction, and at the opening session, at which M. Edouard Herriot, the minister of public instruction presided, it considered particularly the best means of combating tuberculosis. In order to prevent contagion among the other patients and the personnel, M. Maurice Quentin proposed to the general council of the Seine the creation of a special pavilion for tuberculous patients with mental disease. Such a pavilion is to be established at the rural psychopathic institution Chezal Benoit in the Berri region, and will furnish accommodations for all tuberculous psychopaths at present interned in the psychopathic institutions of the department of the Seine. MM. G. Pinot and F. Mariette have asked the municipal council of Paris to construct temporary barracks on the area surrounding the tuberculosis sanatoriums, in order to increase the number of beds and provide quarters for children. The preventoriums are giving encouraging results. The preventorium of Saujon, in the Charente region, near Royan, which is supported by the Union des femmes de France, admits anemic young girls with involved lymph glands who may be tuberculous. It is well organized and equipped, and since July has had open-air classes, which allows the children to make a protracted stay without falling behind in their school work. Furthermore, on the basis of the report of M. Fontenay, the municipal council of Paris favors the reorganization of the Association des préventoriums du Haut Jura pour la jeunesse. The children who, until recently, remained too short a time for them to recover may now stay a whole year.

The department of the Seine, on the basis of the report of M. H. Sellier to the general council of the Seine, accepted the title to the Dispensaire de l'Avenue Secrétan in Paris, bestowed by the Rockefeller Commission. M. Sellier expressed the thanks of the general council to the Rockefeller Commission, which has participated so effectively in the crusade against tuberculosis in the region of Paris.

Antidiphtheria Vaccination

M. Gaston Pinot, in view of the grave epidemic of diphtheria that occurred in the fifth and thirteenth arrondissements of Paris, has proposed the organization of antidiphtheria vaccination in the schools of the department of the Seine. He has suggested that a certificate of antidiphtheria vaccination be required in the schools the same as the certificate of smallpox vaccination. M. Joly presented the subject to the municipal council of Paris. He recalled that vaccination with the Ramon anatoxin has been approved by the Academy of Medicine, and that, with the aid of the Pasteur Institute, it has been used by the school physicians in institutions controlled by the Enseignement de la Seine, and likewise in *écoles maternelles* and in the public schools of Paris. Antidiphtheria vaccination is not compulsory at the present time. Its purpose and usefulness should be explained to the parents of pupils and opportunities offered for free vaccination. In an address delivered before the Assemblée générale des colonies maternelles scolaires, Dr. Jules Renault explained the benefits of antidiphtheria vaccination. His address was published in the Revue de l'union des femmes de France.

The Visiting Nurses

The rôle of the visiting nurses is becoming more and more important in the crusade against the spread of disease in general, and for the propagation of hygienic truths. A popular advertising poster represents a visiting nurse enveloping a whole family within the protecting folds of her ample cloak. The Office publique d'hygiène sociale, influenced by the report of M. Sellier to the general council of the Seine, has increased the number of visiting nurses and laboratory aids. The education of the nurses is very satisfactory. They are not permitted to enter the hospital services until they are 21 years old, although many pass their examinations at 16. To prevent their losing five years of their time, Professor Calmette, assistant director of the Pasteur Institute, has requested that funds be raised or appropriated that will allow candidates for the position of visiting nurse to be employed, until they reach the age of 21, in the preparatory schools, with short periods spent in the social services, the nurseries and domestic science schools.

Creation of a "Flying Squadron" of Nurses

M. G. Pinot, in addressing the municipal council of Paris, emphasized the need of creating a "flying squadron" of nurses capable of assuming household duties in the homes of needy families. Such nurses would be especially helpful in the groups of dwellings that the government is planning to build. Pinot's proposal has the approval of the medical profession. Dr. Hébert, physician to the Bretonneau Hospital in Paris, thinks that the

creation of such a body of nurses would dispense with the hospitalization of many patients, and prevent possible contaminations, especially as regards the contagious diseases of childhood.

The Education of Mothers in Charge of Households

Aside from the regular service of the outpatient departments of the Paris hospitals, they are educating the mothers in charge of households. The physicians of the children's hospitals (Richet, Hutinel, Marquézy) invite them to afternoon talks, in order to give them the necessary instruction in the care of children. This supplements the courses in child rearing and training pursued by the young women in the schools of Paris and the provinces, and the lectures for young women and wives given by physicians and trained nurses.

The Crusade Against Alcoholism

Among the provisions of the Loucheur law pertaining to the construction, by the government, of cheap but comfortable and sanitary dwellings, is that prohibiting the sale of alcoholic beverages in these buildings. The provisions of the law are applicable also to Algeria. The antialcohol campaign is equally active in the rural sections and the smaller cities. The Dijon chapter of the Ligue nationale contre l'alcoolisme organized this year, as in 1923, a prize contest, on the subject of alcohol, in the public schools. The distribution of prizes took place under the chairmanship of Dr. Charpentier, director of the Bacteriologic Institute. At the close of the ceremonies an antialcohol motion picture was shown. In Paris, the municipal council voted an appropriation for the benefit of the Société antialcoolique des agents des chemins de fer français. This society is important by reason of the large number of members that it contains and the effective antialcohol campaign that it can wage. Its program includes instruction in hygiene and the promotion of influences to increase the birth rate.

Yellow Fever Contagion

The deaths of several scientists (notably the bacteriologist Noguchi) from yellow fever has shown the possibility of contagion in connection with laboratory experiments. Dr. Beuuwkes, especially, defended this view, and holds that it has been confirmed by the experimental infection of a monkey *(Macacus rhesus)* by the application of virus to the healthy skin. However, Professor Marchoux, of the Pasteur Institute in Paris, does not share this opinion. In Brazil he has seen the members of the Pasteur mission exposed with impunity to contamination of this nature. Monkeys seem to be much more sensitive to infection than man. As for the source of the infection of the scientists who died recently on the west coast of Africa, it was likely due to the bite of a mosquito that transmitted the virus.

Noise in Relation to the Nervous System of Parisians

M. Jean Chiappe, prefect of police of Paris, has issued an order that drivers of automobiles must slow down at street intersections and be conservative in the use of horns. Thus the noise of Paris will be diminished. Noise is very harmful to the nervous system, as has been pointed out by Dr. Genil-Perrin, chief physician of the asylums of the Seine. Dr. Marage, whose researches on audition are well known, has likewise called attention to the effects of heavy traffic on the eyes and ears, and Professor Janet, of the Collège de France, has warned against the intense strain on the nerves associated with city life.

Visit of a Medical Delegation

A delegation of physicians and hygienic experts from twenty-eight nations of Europe and America visited recently the department of the Seine-Inférieure. On the advice of the health section of the League of Nations, the delegation made a special study of the bureau of social hygiene in Rouen, and then visited the suburban dispensaries.

The Study Tour of Mineral Springs by Physicians and Students

The tours to the mineral springs were inaugurated by Landouzy and Caron de la Carrière. Every year, for a number of years past, a group of physicians and students of the various schools have visited, under the guidance of qualified professors, the well known mineral springs of France. The students of the Faculté de Montpellier visited recently the climatic resorts and the mineral springs of Vivarais, Velay, Lyonnais, Vals, La Bégude, Prades, Neyrac, Pestrin, Saint Laurent les Bains and Charbonnières. They explored also the summer resorts about Cévennes.

The First International Congress of Sanitary Aviation

The first International Congress of Sanitary Aviation will be held in Paris during the latter part of May, 1929. The committee on organization, under the chairmanship of Maréchal Lyautey and Prof. Charles Richet, has appointed M. Robert Charlet as commissioner general of the congress. An executive committee with its seat at 35 rue François Ier, Paris, includes Dr. Chassaing, deputy; Colonel Cheutin, Dubois-le-Cour, Mlle. Marvingt, Lieutenant Colonel Schikele and M. Charlet.

Professor Blumenthal's Lecture on Cancer

Professor Blumenthal, director of the Institute for Cancer Research in Berlin, recently lectured in Paris on the present status of the cancer problem. He reviewed the numerous articles and books published in recent years, and refuted most of the theories proposed. His opinion is that the various types of malignant neoplasms are possibly not of the same biologic origin. He rejects the idea of a specific microbic agent. The proteolytic action of the cancer cell prepares the way for the development of the tumor at the expense of the adjoining tissues, but it cannot be said that the cancer cell has more active multiplicative properties than the fetal and normal cells. A persistent local irritation causes the neoplastic process to develop as a defense reaction, which constitutes the precancerous stage. The cancerous agent, catalyzer or ferment, is probably connected with the macrophagic lymphatic cells. It may be comparable, as Carrel has said, with the d'Herelle bacteriophage. The cancer cells secrete the agent which the macrophages carry.

JAPAN

(From Our Regular Correspondent)

Aug. 24, 1928.

Mrs. Yayoi Yoshioka's Departure to Hawaii

Accompanied by her son, Mrs. Yayoi Yoshioka, director of the Tokyo Female Medical College, attended the Pan-Pacific Women's Conference, in Hawaii in August.

To Study in the United States

August 18, Miss Chieko Utsumi, daughter of Professor Utsumi of the Meiji University, left Yokohama for America. She is a graduate of the Tokyo Girls' College, Tokyo, and is much interested in sports. Her father is the director of the Meiji baseball team. She has been sent to Wellesley College by her alma mater and the Japan Y. W. C. A. to study physical culture.

Physical Culture for Teachers

Our athletes' records in the international Olympic games at Amsterdam are considered to be, in part, a result of physical training in the schools. The government institute for physical training, which will be opened this September, has established postgraduate courses for teachers of physical training in the schools. In addition to anatomy, histology, physiology, biology and hygiene, the curriculum includes sports, fencing, ju-jutsu, archery and swimming. Besides the staff of the institute, professors from the imperial university, the higher normal school, and the army will give them instruction. Noted sportsmen will also aid in this.

Nurse's Training for Female Teachers

In the city primary schools in this country, trained nurses are hired to take care of children at school, but some schools in the country cannot afford to hire nurses. The Osaka Female Normal School has established an institute for training the teachers in nursing. Under the direction of Dr. Minayoshi, some professors from the Osaka Medical College and other physicians will give the girls of the fifth year classes the lessons and training, starting with the new term.

Delegates to the International Red Cross Conference

The Japan Red Cross Society has nominated the delegates to the thirteenth international Red Cross conference, which will be held at The Hague, beginning October 23. The army delegates are Lieutenant Colonel Shimomura and Surgeon Captain Matsumura, while Captain Koga and Lieutenant Commander Surgeon Kambayashi are to represent the navy.

Delegate to the American Army Medical Conference

Dr. Ken Hosoi, Surgeon Captain of the Japanese army, will be a delegate to the American army medical conference to be held at Baltimore, beginning October 4.

Medical Consultants to Be Furnished by Buddhists' Association

In this country there are still some provinces with an uneven distribution of medical practitioners. Shimane is one of them. In that province there are as many as fifty-eight villages where there is no practitioner in 4 square *ri* (nearly 157 square kilometers). In the celebration of the coronation ceremony of the present emperor, which is to be held this autumn, the Shimane Buddhists' Association has decided to establish hired medical consultants in the Buddhist temples in those villages.

The Oversea Medical Investigation Society

July 10, the Keio University held a lecture meeting of the Oversea Medical Investigation Society in the medical department at Yotsuya, Tokyo. The opening address was by Professor Dr. Miyajima. Drs. Hata and Tsuneizumi gave interesting accounts of their recent observations and researches in Europe.

The Yokohama Christian Blind School

The Yokohama Christian Blind School (address, G. F. Draper, 222-B Bluff, Yokohama) is in urgent need of financial assistance. According to the board of managers, the regular income, which consists of the aid of the government, of the social association, and an annual grant from the Women's Society of the Methodist Episcopal Church, is far below the requirements for the necessary expenditures, which amount to 1,000 yen a month. They have given the financial report in detail.

Health Week for Women and Girls

According to the statistics published in this country, the mortality in 1927 was 19.7 per thousand persons in Japan, while the birth rate was 13.9, a 5.8 per thousand decrease of population. The death rate of infants is the highest; next comes that of youths. In Tokyo, beginning April 23, "Health Week" was held by the Y. W. C. A. to promote health among women and girls. This was in cooperation with St. Luke's International Hospital, the Japan Red Cross Society, the White Cross Society and the Tokyo Imperial University. Mrs. Miwata, Miss Tsuneizumi, other members of the association and some professors and physicians gave health talks in various places during the week.

Hot Luncheon Advocated for School Children

Dr. Mabel Elliot of St. Luke's Hospital in Tokyo has urged that a hot lunch be served at the American school there in order to give the children a more satisfactory diet. It has been customary to serve a cold lunch, and Dr. Elliot said that this was probably why the children ate more there in proportion than in Europe and America and got less vitamins than they would if the food were warm, better prepared and more in variety.

Enlargement of the Sotojima Leprosarium

The Sotojima leprosarium in Osaka has been enlarged to admit 150 more lepers. This is the result of the decision to hold the imperial coronation ceremony in Kyoto this fall. All patients with mental disorder and leprosy now there and in surrounding regions must be temporarily removed to some other place.

ITALY

(From Our Regular Correspondent)

June 30, 1928.

Activities of the Society for the Promotion of the Welfare of the War Injured

Professor Lustig, senator, and president of the Opera nazionale per gli invalidi di guerra, has presented to the head of the government an account of the activities of the society during the first decade of its existence. During this period, 264,000 war injured were aided, 11,000 of which belonged to the former Austro-Hungarian Empire. In addition to other aid, effective medical assistance was furnished through the institution of the tuberculosis sanatoriums at Arco and at Ancorano d'Istria. The first tuberculosis sanatorium in southern Italy will soon be opened at Aspromonte. It has been built by the society. A large amount of prosthetic apparatus has been furnished. Social assistance was given the war injured by securing employment for them, by the granting of special land loans, and in other ways.

The Principal Aspects of Italy's Food Problem

At the session of the Commissione nazionale per lo studio dell'alimentazione, the chairman, Prof. Filippo Bottazzi, of the University of Naples, explained the technical and practical aspects of Italy's food problem. For its solution aid must be furnished by the chemist, the physiologist, the hygienist, the agriculturist, the stock raiser, and the statistician. The principal aspects were summed up by Professor Bottazzi as follows: (1) more economic utilization of food products by man; measures for the prevention of waste in transportation, in the hands of the merchant, in the kitchen, and on the table; (2) a rational distribution of products of vegetable origin so as to supply the needs of man and the domestic animals; (3) an adequate available quantity of vegetable and animal products for consumption; (4) new possible sources of food products, such as fish culture, rabbit raising and the use of soy bean meal; (5) distribution of the population according to sex, trades and professions, and social conditions; study of the individual and the family food ration according to conditions and regions; (6) the state of the army, the navy and the air service, and the relative food rations; (7) the present alimentation of large groups (hospitals, colleges, prisons). Other problems concerning the production and the consumption of preserved foods and the food products of the colonies. The various subjects were distributed among the various members of the commission, which will convene again when the papers are ready for presentation.

Antityphoid Vaccination by the Oral Route

In the Bollettino della Città di Milano, Professor Scarpellini, the health commissioner of Milan, gives an account of an experiment with antityphoid vaccination by the oral route as carried out in Milan in 1927. A total of 94,662 persons were thus vaccinated between May 19 and November 30. Vaccines from three different institutes were tried: from the Istituto sieroterapico Milanese, the Istituto biochimico italiano, and the Istituto nazionale di chemioterapia. The population submitted to the vaccinations in their homes, and there were no untoward

symptoms. Taking account of the groups vaccinated by the public-health bureau, a study of the influence of the vaccinations on the morbidity of typhoid has shown that, of 71,131 persons vaccinated, only eighteen developed typhoid, or about one case in 4,000 vaccinated. Among the nonvaccinated there was one case per thousand persons.

Tuberculosis Prophylaxis

The government, through Premier Mussolini, has granted an appropriation of 5,000,000 liras to the Italian Red Cross Society, with the provision that the sum shall be used entirely for (1) the construction, in the province of Nuoro, of a tuberculosis sanatorium for the compartimento of Sardinia, with separate departments for men and women; (2) the enlargement of the sanatorium Cesare Battisti in Rome, increasing its capacity for men by forty beds, and adding a new department for women. These two institutions are for the benefit of the laboring and the employed classes.

In Memory of Professor Forlanini

Special ceremonies were held in the Great Hall of the Clinica Medica of the University of Pavia in commemoration of the tenth anniversary of the death of Prof. Carlo Forlanini. Professor Morelli, his pupil and successor in the occupancy of the chair, recounted the scientific work of his teacher and described his theory of pulmonary collapse therapy in tuberculosis, which resulted in the discovery of artificial pneumothorax. He recalled the anxieties of Professor Forlanini during the maturation and the application of his conceptions, and stated that the first recognition of the value of his discovery came from foreign countries. According to Professor Morelli, pneumothorax is not the greatest of Forlanini's discoveries: He was a precursor in the present conceptions of the functions of the suprarenal glands. His conception of hypertension being due to arteriospasm is also important. At the close of the ceremonies, Professor Vaccari, the mayor of Pavia, assumed the task of providing a monument to him.

RIO DE JANEIRO

(From Our Regular Correspondent)

Aug. 15, 1928.

Etiology of Climatic Bubo

Dr. J. M. Gomes presented before the Society of Biology and Hygiene a paper on the etiology of climatic bubo. In 1921, Favre reported his researches on the etiology of this disease. Using a special medium, rich in egg and fragments of glands, he succeeded in cultivating bacterial species with certain regularity. Since then, all investigators of the subject have considered climatic bubo as a disease of unknown etiology. During the past year, Gomes had three cases of the disease. By means of repeated punctures of the glands involved, Gomes succeeded in cultivating in Petroff's medium a germ whose morphologic characteristics are identical with those of the germ isolated by Favre. Direct smears proved negative for any organism in every case. Positive cultures were obtained in Petroff's medium, but the bacillus grows also in Benzançon's medium and in blood gelose.

Bile and Experimental Paratyphoid B

Dr. Eduardo Vaz studied experimentally in rabbits the prophylactic value of the liquid vaccine T. A. B., given by mouth, using Besredka's bile-sensitization method. Bile exerts a local and general action. From his experiments, Vaz concludes that: 1. With the same dose of *Salmonella schottmuelleri* by venous injection, rabbits sensitized with oxgall by mouth seldom die. 2. With the same quantity of bile and different doses of the germ, the rabbits which receive the greater dose die. 3. Besides its local action on the alimentary tract, which manifests itself by desquamative, congestive and hemorrhagic lesions, bile exerts a general action. 4. The intensity of the lesions due to the intoxication depends, in part, on the sensitiveness of the individual. 5. It is possible to sensitize rabbits to venous inoculation of the germ, using small, nonlethal doses. 6. The sensitizing action is already apparent two hours after ingestion of bile, but it disappears promptly. Twenty-four hours afterward, all sensitization has disappeared. 7. Therefore, it seems that the sensitization to the parenteral infection produced by bile depends on the time the bile stays in the intestinal tube, rather than on the intensity of the lesions produced. 8. By enterotropism, the germ inoculated in the vein uses the bile in the intestinal lumen as a culture medium, and there it exerts simultaneously two actions, specific and nonspecific. 9. In rabbits infected with bile, the process follows a course of several days, with positive blood culture, marked oscillations of temperature, which tends to fall, and death with hypothermia, and predominance of necrotic lesions at the ileocecal valve, different from those produced by bile.

AUSTRALIA

(From Our Regular Correspondent)

Aug. 6, 1928.

The Transpacific Flight

As civilization becomes more complex, new problems arise. The exploit of Kingsford Smith and his associates has done more than stagger our standards of rapid communication. From the medical aspect, by these new standards, the endemic centers of hitherto exotic disease have been brought to dangerous proximity to Australia. One has in mind the primitive sanitation of the Orient. "East is east and west is west" said Kipling, but weeks by steamship have now become days by air transport.

Isochronic charts of Australian ports based on the steamer rate of 270 miles a day will need to have superimposed lines showing time in terms of the more rapid communication by air. Incubation periods remain constant, but transit times have become shorter. The last case of smallpox in Australia was in August, 1921, and plague has not occurred since June, 1923. Cholera and yellow fever have never penetrated Australia's quarantine barrier. An important factor in this happy state of affairs is the length of time that must elapse on the voyage from infected ports and the probability of bacteria, during that time, manifesting their presence by established disease.

Plague and cholera exist at Rangoon and Bombay, which are eighteen days by steam from Australia. The incubation period is from six days. By fast air transport, Rangoon is sixty-two hours from Australia. Smallpox may not develop for sixteen days after exposure to infection. During that time it is possible (as Hinkler has shown) to travel from England to Australia.

The solution of the problem is not quarantine on arrival. Who would travel 6,000 miles in eighty-four hours to spend the following two or three weeks in a quarantine station? Such a method of control is obviously unpractical. The only possible control is by a method of quarantine surveillance. Vaccination of the population and similar methods of mass immunization will again be utilized to protect a now exposed community.

The Federal Health Council

Although the commonwealth of Australia was constituted more than a quarter of a century ago, the commonwealth department of health was not organized as such until March, 1921. The creation of this department tended, as would be expected, to result in some degree of overlapping, and the absence of uniformity of health legislation and procedure soon became forced on the consideration of health administrators.

As one result of the royal commission of health, which presented its report to the parliament of the commonwealth in 1926, a federal health council was formed from representatives

of the commonwealth department of health and the government of each Australian state. The function of this Council is

> To advise the commonwealth and state governments on health questions generally, and as to measures which should be adopted for the cooperation of commonwealth with states, and of states with states, and for the promotion of uniformity of legislation and administration, where advisable, in matters concerning the health of the people.

The council has already been imbued with the spirit of its mission, and, preliminary arrangements having been concluded, quiet deliberation and the spirit of cooperation for the common good are having results.

BERLIN

(From Our Regular Correspondent)

Aug. 4, 1928.

Consultations on Marriage

Prof. Dr. von Drigalski, health officer (*medizinalrat*) in Berlin, addressed recently the Bund für Volksaufartung und Erbkunde on the subject of medical consultations on marriage. The ideal purpose of a consultation center for marriage and family relations is, in collaboration with other established centers, to check and counteract degenerative manifestations appearing in the body of the population; to preserve the greatest possession of the nation: its heritage represented by its people, and to advance the cause of anthropologic and hereditobiologic research through genealogical investigations. While this far-flung goal must never be lost sight of, it is true that nearer and more primitive problems await solution now. The primary aim of a medical consultation center on marriage is to prevent the consummation of marriages that are likely to be dissolved or to be a menace to one or the other of the contracting parties. Another purpose is to demonstrate the groundlessness of the objections sometimes raised against the creation of such centers, which will be sure to have a positive effect and make for improved conditions. Furthermore, the medical consultation center should endeavor to, and possibly will succeed in awakening and strengthening the general sense of moral responsibility involved in the processes of human matings. The health of the people depends, to a great extent, on the character of the marriages, and forgetfulness of this fact may lead to the development of disease in one or the other spouse and in the offspring. The chief menace arises from active tuberculosis, syphilis and gonorrhea. The most serious pathologic manifestations in the offspring are hereditary tendencies to mental disease and to epilepsy, and forms of constitutional inferiority with an hereditary basis. Many also stand in need of medical advice with reference to the fertility resulting from wedlock. A few years ago, the consultation centers on marriage were called on frequently to give advice as to how the prospects for offspring might be improved. Children were more frequently desired than not desired. In recent years, the reverse condition is frequently noted. The clientele of such centers today consists chiefly of those who are contemplating marriage; married persons who are interested in problems concerning offspring or who are in need of advice by reason of existing diseases, and parents of persons recently married. With the increasing enlightenment in regard to the existing menace of venereal diseases, there is manifested greater interest in securing adequate protection against these dangers. It is surprising, however, how many persons fail to realize, in spite of the attempts that have been made to enlighten the public, that manifest tuberculosis in a matrimonial partner constitutes a grave menace for the other spouse, as well as the entourage in general. According to the experiences in Berlin, the desirability of a general medical examination of two parties about to enter into matrimonial relations is being more and more recognized, which furnishes evidence for the possibility of awakening a stronger sense of responsibility. The matrimonial consultation center should have the right to examine the contracting parties and to make such suggestions as it deems advisable, but it should not be empowered to give medical treatment. However, it should have the right and consider it its duty to call the attention of applicants to the possible need of medical treatment or consultation. It thus makes medical treatment frequently available to persons who would not otherwise seek medical advice, and especially to those who are ill without knowing it. Venereal subjects should be determined with great care and accuracy. The importance of the diagnosis for the parties to the marriage contract is clear. In the case of tuberculosis, the diagnosis is more difficult. The occurrence of several cases in the same family is cause for suspicion, especially if there is general constitutional weakness. The investigation of families is here important. Only in the presence of open tuberculosis is an attempt made to dissuade the applicants from marrying. The course of the physician is unusually difficult if he suspects that either of the parties is mentally unsound. Great caution should be exercised if there have been psychopathic cases in the family, and in prospective consanguineous marriages if insanity is known to have occurred in the family. An experienced specialist must decide delicate cases, for the matrimonial consultation center must not come to be regarded as an antimarriage bureau. One must be careful not to consider young delicate persons who are under weight but have a good mental endowment as victims of hereditary asthenia unimpaired by external influence. The medical adviser of the matrimonial consultation center must be familiar with the facts of hereditary transmission and the theories of constitutional impairment; he must be acquainted also with the pertinent clinical and anthropologic methods of examination. In connection with public health services organized with that object in view, matrimonial consultation centers can be established without great expense. Definitely organized cooperation with the nearest available local representatives of hereditary biology and with other specialists is necessary for the more difficult cases. Cooperation with school physicians, the municipal registrar's office, and welfare centers for the tuberculous is likewise valuable. Advice is given with full recognition of the right of privileged communication, and caution must be observed in giving decisions in all cases. The important general task of the matrimonial consultation center is the increase of the sense of responsibility and obligation, and the avoidance of venereal diseases.

The Prescribing of Alcohol in Finland

The *Deutsche medizinische Wochenschrift* carries an article by G. Schmölder in which he refers to the "striking interest" that physicians in dry countries take in the curative effects of alcohol and gives some data that he has collected from Finland. Alcoholic beverages can be prescribed there only on official prescription blanks. Of the total number of physicians in Finland only from twenty to thirty failed, during the period 1922-1927, to make use of these special blanks; and only four veterinarians found no use for them. When we consider that there are 2,700 physicians in Finland, it will be seen what a small percentage of them have renounced, in principle, the use of alcohol. The demand for the blanks for such prescriptions has steadily increased. Whereas in the period 1922-1924 only 717 physicians demanded blanks, during a month in 1926 the number had increased to 850, and in the first five months of 1927 to 870. Also the number of blanks required by each physician increased rapidly. A large number of physicians issued each month more than fifty prescriptions, and two physicians issued, in one month, more than 500 prescriptions. Even the dentists, who according to the law have not the right to prescribe alcohol, were found to consume considerable quantities of this fluid in their practice. One dentist in 1926 issued 1,300 prescriptions in ten months. In a single year, in Finland, 175,000 blanks were issued to physicians, so that, on an average, one prescription is issued for one out of every twenty inhabitants. In view of these facts, the government of Finland is considering passing a law restricting the use of such blanks by physicians.

Marriages

JOSEPH LEO, New York, to Miss Mary Georgiann Draser of Mascoutah, Ill., at St. Louis, September 5.

LEE FOSHAY, Iowa City, to Miss Harriet Buchanan Holmes of Wianno, Cape Cod, Mass., August 17.

MAC HARPER SEYFARTH, Freeport, Ill., to Miss Dorothy D. Smith of Sioux City, Iowa, July 11.

NELSON D. MORRIS, Toledo, Ohio, to Miss Gladys Louise Mac Alpine of Detroit, July 14.

HENRY DELOST BROWN to Miss Thelma Ann Dunham, both of Toledo, Ohio, July 7.

MARK GRABOIS KANTOR to Miss Mildred Harris, both of New York, August 31.

Deaths

D. H. Monroe, Emerson, Ga.; University of Georgia Medical Department, Augusta, 1900; member of the Medical Association of Georgia; health officer of Bartow County and Cartersville; for many years member and chairman of the county board of education; aged 53; died, August 22, at the Piedmont Hospital, Atlanta, of cerebral hemorrhage and diabetes mellitus.

Albert C. Thomas, Foxboro, Mass.; Baltimore Medical College, 1898; member of the American Psychiatric Association, Association for Research in Nervous and Mental Diseases, and the New England Society of Psychiatry; medical superintendent of the Foxboro State Hospital; formerly superintendent of the New Haven Hospital; aged 53; died recently.

Becker Christian Knudsen ✠ Clinton, Iowa; State University of Iowa College of Medicine, Iowa City, 1898; member of the Radiological Society of North America; on the staffs of the Jane Lamb Memorial and St. Joseph's Mercy hospitals; aged 57; died suddenly, August 10, at Rochester, Minn., of coronary stenosis and carcinoma of the stomach.

Thomas B. Horton, Curtis Bay, Md.; Baltimore University School of Medicine, 1891; county coroner of Brooklyn and Curtis Bay, 1902-1918, and city coroner of the eastern and southwestern districts, 1918-1928; school trustee and health officer, 1902-1919; aged 62; died, August 28, at the Mercy Hospital, Baltimore, of pneumonia.

Valentine V. Adamson, Holton, Kan.; College of Physicians and Surgeons, Keokuk, Iowa, 1856; Bellevue Hospital Medical College, New York, 1869; Civil War veteran; formerly on the staff of the Kansas State Soldiers' Home Hospital, Fort Dodge; aged 94; died, August 5, of senility.

Frederick Welty Coover, Harrisburg, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1875; member of the Medical Society of the State of Pennsylvania; on the staff of the Harrisburg Hospital; for many years county physician; aged 76; died, August 1, of chronic nephritis.

Henry Willis Hurd ✠ Biddeford, Maine; Medical School of Maine, Portland, 1899; past president of the York County Medical Society; formerly on the staffs of the Trull and Webber hospitals; aged 56; died, July 16, at St. Barnabas Hospital, Portland, following an operation.

Julian Max Finke ✠ Chicago; Jenner Medical College, Chicago, 1913; on the staff of the Francis Willard and Garfield Park hospitals; aged 41; died, August 25, of hemorrhage from the internal carotid artery as the result of a bullet wound inflicted by a highwayman.

E. J. Buchanan, Lexington, N. C.; University of Maryland School of Medicine, Baltimore, 1892; member of the Medical Society of the State of North Carolina; aged 64; died, August 31, in a sanatorium at Charlotte, of cerebral hemorrhage.

Frank Benton Carpenter ✠ San Francisco; Medical Department of Columbia College, New York, 1883; formerly lecturer in gynecology, Stanford University School of Medicine; aged 69; died, July 16, at Logan, Utah, of coronary occlusion.

Mills Tandy Chastain, Marshall, Mo.; Medical Department of the University of the City of New York, 1866; Civil War veteran; formerly mayor of Marshall and member of the school board; aged 88; died, August 4, of heart disease and nephritis.

David C. Kelly Binkley, Denver, Tenn.; Vanderbilt University School of Medicine, Nashville, 1878; member of the Tennessee State Medical Association; aged 71; died, August 14, in a hospital at Nashville, following an operation.

Charles Magee Anderson, Toronto, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1916; director of laboratories, Ontario Department of Health; served during the World War; aged 37; died, July 19.

George Marshall Robinson, McConnellsburg, Pa.; Medical Department of Columbian University, Washington, D. C., 1901; member of the Medical Society of the State of Pennsylvania; aged 55; died, July 4.

Michael Aloysius Cummings, Fall River, Mass.; Harvard University Medical School, Boston, 1888; veteran of the Spanish-American War; aged 67; died, August 2, of arteriosclerosis and nephritis.

John L. Gray ✠ Caldwell, Ohio; College . . Physicians and Surgeons, Keokuk, Iowa, 1896; secretary of the Noble County Medical Society; aged 62; died suddenly, August 11, of cerebral hemorrhage.

Benjamin Foster Halsey, Roper, N. C.; Vanderbilt University School of Medicine, Nashville, Tenn., 1893; member of the Medical Society of the State of North Carolina; aged 65; died, June 15.

James Westwood Armistead, Grove Hill, Ala.; Medical College of Alabama, Mobile, 1883; member of the Medical Association of the State of Alabama; aged 68; died, July 5, of gastritis.

Elisha B. Davis, Tippecanoe City, Ohio; Columbus Medical College, 1886; member of the Ohio State Medical Association; aged 70; died, August 24, of a self-inflicted bullet wound.

Max Wilson Barbour, Helena, Mont.; Medical College of Ohio, Cincinnati, 1897; for five years health officer of Lewis and Clark County; aged 55; died, August 14, of heart disease.

Jean Mark Williams, Los Angeles; New York Medical College and Hospital for Women, 1905; aged 56; died, July 18, at St. Vincent's Hospital, following an operation for goiter.

Walter B. Diefenderfer, Altoona, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1889; aged 66; died, February 23, at Philadelphia, of chronic nephritis.

Dewitt Rush Good ✠ New Point, Ind.; Chicago Homeopathic Medical College, 1896; served during the World War; aged 57; died, August 12, of paralysis of the throat.

Hison F. Williams, Stonewall, Okla.; University of Arkansas School of Medicine, Little Rock, 1912; member of the Arkansas Medical Society; aged 61; died, June 16.

Richard W. Bovee, St. David, Ill.; Hahnemann Medical College and Hospital, Chicago, 1894; formerly county coroner and mayor of St. David; aged 61; died, August 6.

Albert Eveleth Kyte, Montgomery, N. Y.; Medical Department of the University of the City of New York, 1892; aged 63; died, August 26, of angina pectoris.

George Henry Brodbeck ✠ Roann, Ind.; Medical College of Indiana, Indianapolis, 1882; aged 70; died, August 9, of cardiorenal vascular disease with paralysis agitans.

William Pettyman Miller, Wilmington, Del.; College of Physicians and Surgeons, Baltimore, 1887; aged 61; died, July 28, in a local hospital, of heart disease.

James Wyly Crawford, Cornelia, Ga.; University of Nashville (Tenn.) Medical Department, 1904; aged 56; died, July 20, of carcinoma of the liver and gallbladder.

William Aloysius Bennett ✠ Chicago; Georgetown University School of Medicine, Washington, D. C., 1895; aged 55; died, August 20, of acute myocarditis.

Richard Herbert Cramer, New Cumberland, W. Va.; Western Pennsylvania Medical College, Pittsburgh, 1895; aged 59; died, August 17, of gastric ulcer.

Thomas Cleland Bell, Tucson, Ariz.; Vanderbilt University School of Medicine, Nashville, 1912; aged 41; died, August 9, of pulmonary tuberculosis.

Mark W. Levert, Addis, La.; University of the South Medical Department, Sewanee, Tenn., 1897; aged 54; died, January 9, at Brusly, of carcinoma.

Charles Hubbard Powers, Sanger, Calif.; Boston University School of Medicine, 1883; aged 66; died, January 12, at Fresno, of diabetes mellitus.

George William Galvin, Boston; Harvard University Medical School, Boston, 1878; aged 74; died, August 17, of carcinoma of the stomach.

Max William Smith, Brooklyn; Long Island College Hospital, Brooklyn, 1908; aged 43; died, August 9, at the Jewish Hospital, of heart disease.

Edward Leonard Adams, Florala, Ala.; University of Alabama School of Medicine, Tuscaloosa, 1897; died, July 12, as the result of paralysis.

Milan Soule, San Francisco; University of Vermont College of Medicine, Burlington, 1869; aged 81; died, August 29, of cerebral hemorrhage.

Edward Kelly ✠ Lebanon, Ky.; University of Nashville Medical Department, 1881; aged 68; died suddenly, August 17, of cerebral hemorrhage.

Moses M. Savage ✠ Baltimore; College of Physicians and Surgeons, Baltimore, 1895; aged 56; died, June 25, at the Sinai Hospital, of carcinoma.

Marquis Lafayette Pollard, Thornton, Miss.; Memphis (Tenn.) Hospital Medical College, 1901; aged 50; died, August 3, of paralysis.

Clayton Charles Dowswell, Detroit; Detroit College of Medicine and Surgery, 1902; aged 60; died, February 17, of cerebral hemorrhage.

George Hetrich ✠ Birdsboro, Pa.; Jefferson Medical College of Philadelphia, 1885; aged 66; died, August 10, of chronic interstitial nephritis.

A. D. Looney, Oplin, Texas (registered by Texas State Board of Medical Examiners, Act of 1907); aged 65; died, July 24, at Dallas.

William David Hilliard, Asheville, N. C.; Jefferson Medical College of Philadelphia, 1878; aged 70; died, August 16, of angina pectoris.

John T. Woods ✠ Chelsea, Mich.; Michigan College of Medicine and Surgery, Detroit, 1897; aged 60; died in August, of angina pectoris.

Henry Samuel Friedland, Brooklyn; Long Island College Hospital, Brooklyn, 1907; aged 45; died, August 23, of cerebral hemorrhage.

David C. Coplin, Boothsville, W. Va.; University of Maryland School of Medicine, Baltimore, 1877; aged 83; died suddenly, August 2.

Walter C. Murphy, Burgaw, N. C.; Medical Department of Columbian University, Washington, D. C., 1873; aged 76; died, August 20.

James Ignatius Lawlor, Lawrence, Mass. (licensed, Massachusetts, 1919); aged 40; died, June 4, of embolism of the coronary artery.

William Raymond Ellis, Brookline, Mass.; Harvard University Medical School, Boston, 1898; aged 59; died, July 18, of heart disease.

Oliver Hood Harris, Mobile, Ala.; Medical College of Alabama, Mobile, 1895; aged 54; died, August 15, of nephritis due to sepsis.

George W. Gillespie, Rowlandsville, Md.; University of Maryland School of Medicine, Baltimore, 1880; aged 87; died, June 3.

Henderson J. Neely, Butler, Pa.; Jefferson Medical College of Philadelphia, 1881; aged 76; died, September 5, of heart disease.

Henry Jacob Fleischer ✠ Des Moines, Wash.; Rush Medical College, Chicago, 1879; aged 70; died, July 23, of heart disease.

John Anderson Lamb, Dunlap, Tenn.; Vanderbilt University School of Medicine, Nashville, 1888; aged 74; died, July 13.

Thomas Braxton Burdine, Lawrenceburg, Tenn.; Memphis Hospital Medical College, 1899; aged 65; died, July 21.

John B. England, Luray, Tenn. (licensed, Tennessee, 1889); aged 75; died, July 28, of arteriosclerosis and cerebral embolism.

James T. Hufford, Clearport, Ohio (licensed, Ohio, 1896); Civil War veteran; aged 84; died, August 21, of nephritis.

Mary Berkes Wetmore, Buffalo, N. Y.; University of Buffalo School of Medicine, 1880; aged 77; died, May 23.

Perly Jason Lloyd, Washington, N. C.; Meharry Medical College, Nashville, Tenn., 1925; aged 33; died, July 16.

Joshua Hicks, Monona, Iowa; Barnes Medical College, St. Louis, 1900; aged 83; died, March 3, of pneumonia.

Howard C. Day, Harrisonville, Ohio; Starling Medical College, Columbus, 1876; aged 74; died, September 4.

Ralph A. Quarles, Fairhope, Ala.; St. Louis Medical College, 1866; aged 85; died, August 23, of heart disease.

James Madison Broyles, Sevierville, Tenn.; Chattanooga Medical College, 1905; aged 72; died, August 26.

Correspondence

EXTRACT OF WHEAT GERM

To the Editor:—Hoobler (THE JOURNAL, August 4, p. 307), in a recent article on the symptomatology of vitamin B deficiency in infants, states that an alcoholic extract rich in the antineuritic substance of the wheat germ is not obtainable on a commercial basis.

While working on pernicious anemia, Koessler and Maurer (THE JOURNAL, Sept. 3, 1927, p. 768) used such an extract to stimulate the appetite and supply possible vitamin deficiency in severe cases of anemia. For this purpose a successful commercial process has been developed in the Otho S. A. Sprague Memorial Institute for its manufacture, a description of which method will be published soon. This product is being used in clinical research in the Cook County and Children's hospitals, Chicago, and its properties and vitamin content are being tested experimentally on animals at the University of Chicago.

It is now being manufactured for us and may be obtained free for experimental use, either clinically or on animals, by applying to the director of the Otho S. A. Sprague Memorial Institute, University of Chicago.

SIEGFRIED MAURER, M.D., Chicago.

"IS ECLAMPSIA A HYPOGLYCEMIA?"

To the Editor:—Your editorial "Is Eclampsia a Hypoglycemia?" (THE JOURNAL, August 4, p. 324) has aroused the following ideas directly connected with the association of hypoglycemias with convulsions, eclamptic or otherwise.

1. How is it possible to produce hyperinsulinemia by the administration of dextrose? In cases of coma (diabetic) we find a large excess of dextrose in the blood, but this cannot excite the production of insulin in a diabetic pancreas; but it is contended that in nondiabetic eclamptic cases an excess of sugar by intravenous injection in the blood will excite an overproduction of insulin with hypoglycemia and increased convulsions. This seems unreasonable since the blood sugar rises first, and the production of insulin follows, provided the pancreas is able to meet the demand; the insulin would be produced only to equalize the requirements of the blood sugar and no hyperinsulinemia could be produced, since the blood sugar would always exceed the supply of insulin. A hyperinsulinemia, however, would certainly be produced when the pancreas is healthy, if exogenous insulin were injected with the dextrose administered. This explains and justifies the Titus treatment by dextrose alone.

2. Why should the administration of dextrose alone be the proper treatment for hypoglycemia causing convulsions? Since the reduction of the blood sugar is the cause of the convulsions, increasing the blood sugar will relieve them.

3. What causes the hypoglycemia itself? A consideration of the two known causes of the reduction of blood sugar, namely, simple oxidation and addition of insulin to the blood, in connection with the facts of pregnancy, may explain this. First, hyperinsulinemia is impossible, even though the extra pancreas of the fetus may be producing since no insulin is produced until the blood sugar requires it. On the other hand, in the later months of pregnancy general metabolism from proteins, carbohydrates and fats is greatly increased, and as carbohydrates take the first strain always, they are used in greater quantities than usual and by direct oxidation, as can be proved by the respiratory quotient. More than normal amounts of dextrose are removed from the blood by direct oxidation and hypoglycemia and convulsions result, which can be relieved by the administration of dextrose to raise the blood sugar. Why this increased metabolism takes place in only a few out of many thousands we do not know.

4. How does the convulsion temporarily relieve itself? It is well known from many diabetic laboratory experiments that the glycogen stores of the skeletal muscles become greatly depleted following the muscular action caused by convulsions. The lactic acid formed from these muscle explosions of glycogen resynthesizes in the blood into dextrose, thus restoring the blood sugar to normal and relieving the convulsion for a time.

5. The existence in a large percentage of pregnant women of a lowered renal threshold for sugar by which there is a constant waste of blood sugar, shown by mild glycosuria, makes the conclusion obvious that eclamptic convulsions are not caused by hyperinsulinemia, which is impossible, but by an increased oxidation of dextrose coupled with a constant loss of blood sugar over a lowered renal threshold.

GEORGE H. TUTTLE, M.D., South Acton, Mass.

[Dr. Tuttle's letter was referred to Dr. Titus, who comments:]

To the Editor:—In paragraph 1, Dr. Tuttle refers to the hypoglycemia from prolonged intravenous injection of dextrose. This was not seen in eclamptic patients, as he assumes, but was produced experimentally in normal individuals, as explained in our original paper. This reaction has been demonstrated by several investigators, notably Thalhimer and his co-workers.

Briefly, the experiment is as follows: A continuous injection of dextrose solution is given over a prolonged period of time to a normal, nondiabetic individual, blood sugar determinations being made at frequent intervals. It was found that the blood sugar rises sharply at first and continues at a high level for a time, after which there begins to be a steady fall in spite of the constant inflow of dextrose from the injection. It may seem paradoxical, but this fall continues downward if the intravenous injection is continued; the blood sugar soon reaches and passes its original "normal" level and presently such low levels are attained that symptoms of hypoglycemic reaction occur.

With this in mind, Dr. Duncan of Montreal recently suggested to me the possibility that certain of the reactions following dextrose injections in nondiabetic individuals, heretofore attributed to faulty technic, may actually be hypoglycemic reactions either from this source alone or from this plus the insulin which is so frequently given with these injections.

The explanation of this as being a hyperinsulinemia is not as unreasonable as Dr. Tuttle suggests. Nature is notoriously lavish in her response to demands; the islands of Langerhans meet this unusual influx of sugar by pouring out, not merely enough insulin "to equalize" this, but on the contrary so much more insulin than is needed that hypoglycemia results even in the presence of an excessive sugar intake.

My contention that insulin should not be added to dextrose injections for patients with any nondiabetic acidosis has been based in part on this view that these conditions are due to a deficiency in the body stores of carbohydrates, and that an undiseased pancreas is fully competent to manufacture all and even more than all the insulin this patient may need.

I am in thorough accord with Dr. Tuttle's second paragraph, and in his third paragraph there is much to be conceded to his line of reasoning. In this connection may I say, however, that Dodds and I have recently published (*Am. J. Obst. & Gynec.* **16**:90 [July] 1928) a communication discussing the etiologic significance of lowered blood sugar values in the vomiting of pregnancy. We are about prepared to believe now that all pregnancy toxemias are of common origin, namely, a carbohydrate deficiency, and that the differences in their symptoms in early and in late pregnancy are due to the acuteness of the process, i. e., the rapidity of the carbohydrate depletion.

Dr. Tuttle's final paragraph is an excellent exposition of the physiologic process which accounts for the sharp rises shown by our blood sugar curves in eclamptic patients immediately following the convulsions. It is this that leads us to believe that such convulsions may actually be a protective measure.

PAUL TITUS, M.D., Pittsburgh.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TECHNIC OF CHEMICAL STUDIES OF BLOOD

To the Editor:—In reference to the analysis of blood for sugar, creatinine, uric acid, chlorides and nonprotein nitrogen by the Folin and Wu method, will you kindly state for each constituent: (*a*) the limit of time a specimen of oxylated whole blood may stand at icebox temperature before analysis; (*b*) the limit of time a "blood filtrate" (made within an hour after withdrawal of the blood) may stand at icebox temperature before analysis. STANLEY J. PELTIER, M.S., Mount Clemens, Mich.

ANSWER.—It is a good rule to start chemical blood analysis within an hour after the specimens have been taken, whenever this is practicable. When the Folin-Wu methods are to be used, but time does not permit the completion of the analysis, it is preferable to make the protein precipitation at once, since the Folin-Wu filtrate will keep perfectly for two or three days in the refrigerator without the addition of a preservative, and much longer if 1 or 2 drops of toluene or xylene is added to the filtrate from each 10 cc. of blood. It is difficult to state how long a specimen of oxalated whole blood may be permitted to stand at icebox temperature and still furnish reliable results. However, if the blood is taken under essentially sterile conditions and immediately refrigerated, the figures obtained for the constituents mentioned will probably still be valid clinically after one, two and even three days. There should be no change in the chlorides or creatinine, but there is a tendency for the nonprotein nitrogen to increase slightly and the uric acid to fall slightly. The blood sugar is likely to drop appreciably, because of glycolysis. These changes would vary with different specimens. In case of bacterial contamination the results might be very misleading.

USE OF CITRATED BLOOD

To the Editor:—Can you give me any information as to the practicability and safety of keeping citrated blood on ice for future intravenous use, and what period of time is regarded as the limit of safety? Am I correct in assuming that the addition of physiologic solution of sodium chloride to the citrated blood is valueless and harmful?

M. A. PERSKY, M.D., Providence, R. I.

ANSWER.—Citrated blood can be best preserved by the method of Rous and Turner (*J. Exper. Med.* **23**:219, 239 [Feb.] 1926). Three parts of blood are caught in a mixture which contains two parts of isotonic sodium citrate solution (3.8 per cent in water) and five parts of isotonic dextrose solution (5.4 per cent in water). After standing, the supernatant fluid can be drawn off and the cells suspended in Locke's solution. Preferably the cells are filtered through gauze before injection. Most observers prefer to have the cells suspended in Locke's solution when injected; it certainly does not appear to be harmful. When properly kept on ice, the cell suspension may be used for about one month. A longer storage is not recommended.

ECZEMA IN INFANCY

To the Editor:—A child, aged 9 months, has had eczema of the face for eight months. Intradermal injection of cow's and goat's milk protein gives a strong positive reaction. What sort of diet can I give him so that milk is entirely eliminated from the diet? Any reference to relevant literature will be appreciated. Please omit name.

M.D., Long Beach, Calif.

ANSWER.—The etiology of eczema in infancy cannot be concisely or positively stated. External irritants are less often the chief factor in causing eczema in infancy than in later life. Errors in metabolism resulting from faulty diet or individual predisposition or both are facts of importance. Intolerance of excessive fat and carbohydrate by these infants is well recognized. Faulty mineral metabolism has been noted. The rôle of proteins as a causative factor has been emphasized since the introduction of the cutaneous sensitization tests. Proportionally large numbers of infants with eczema show positive skin tests. Their interpretation, however, must be made with a fair degree of caution. Many of these infants having positive skin reactions do not show positive clinical change following withdrawal of this protein from their diet. Skin reactions may be negative at times only to be positive at a later date. There is evidence that in certain cases the skin tests are negative even though withdrawal or addition of a food protein may relieve or bring on symptoms of sensitization. A positive skin reaction to milk

does not necessarily entirely preclude the use of milk in the diet. Frequently milk can be tolerated after long boiling, which breaks the protein curd and coagulates the lactalbumin. If both cow's and goat's milk must be eliminated, breast milk should be obtained. Cereals, soups and vegetable purées must necessarily form a large part of the diet. Desensitization either by hypodermic or mouth administration of increasing doses of the offending protein may be attempted.

The following articles may be referred to:

Blackfan, K. D.: Cutaneous Reactions from Proteins in Eczema, *Am. J. Dis. Child.* **11:** 441 (June) 1916.
O'Keefe, E. S.: The Relation of Food to Infantile Eczema, *Boston M. & S. J.* **183:** 569 (Nov. 11) 1920.
O'Keefe, E. S.: Protein Sensitivity in Children with Negative Cutaneous Reactions, THE JOURNAL, April 21, 1923, p. 1120.
Schloss, O. M.: Allergy in Infants and Children, *Am. J. Dis. Child.* **19:** 433 (June) 1920.
Sidlick, D. M., and Knowles, F. C.: The Value of Cutaneous Sensitization Tests Employed in Eczema and Popular Urticaria of Childhood, *Am. J. Dis. Child.* **23:** 316 (April) 1922.

TREATMENT OF RECURRENT HERPES

To the Editor:—A woman, aged 20, is suffering from a well localized dermatitis of the chin. The condition was once diagnosed as a "weeping eczema" and "Desitin" ointment was prescribed. The eruption exhibits itself about twice a year, once always in the month of August. Its development is preceded by a feeling of intense itching on the site of the following eruption on the chin. There is some rise in temperature, with a general nervous and irritable feeling. The eruption does not consist of pimples or boils, but of white blister formation with a constant oozing of yellow pus. The blisters are small and the area does not appear to be red or swollen. The condition has thus reappeared regularly twice a year for the last six years, and at each period lasts for about two weeks. Zinc oxide, "Desitin" and drying solutions seem of little avail, for they do not hasten recovery. What is the nature of this condition? How can the relentless itching be relieved? What would you advise as effective treatment or possible cure? M.D., Brooklyn.

ANSWER.—The description suggests a recurrent herpes; that is, large vesicles which become pustular, about the mouth, with some systemic disturbance and more than the ordinary amount of subjective symptoms in the lesion. Occasionally one sees cases in which an extensive herpes recurs in the same area, usually about the mouth. It is usually associated with some disturbance of the general health, which would account for the bad feeling and rise of temperature in this case. It is self-limiting, unless it gets infected, and develops into an impetigo which continues itself.

Local treatment should consist, in the first place, in avoiding infection. This can be done by sponging with mercuric chloride solution, 1:2,000 or 1:4,000, two or three times a day, or sponging with spirit of camphor—which also relieves the itching—or some other antiseptic. The application of compresses of cool sterile water or boric acid solution will be soothing. As an ointment to protect the surface and keep it from getting too dry, the following would be all right:

Ammoniated mercury	1 Gm.
Boric acid	7 Gm.
Cold cream	to make 50 Gm.

The general health of the patient should be investigated to try to locate the cause of the systemic disturbance. If it is a herpes, it depends on something of that sort.

The proprietary preparation "Desitin" was reported on unfavorably by the Council on Pharmacy and Chemistry (THE JOURNAL, Feb. 26, 1927, p. 666).

TREATMENT FOR CEREBROSPINAL SYPHILIS

To the Editor:—Would you be so kind as to give me in detail what is considered to be the most effective treatment of cerebrospinal syphilis? Where could I get the data for malarial inoculation of cerebrospinal syphilitic patients? Please omit name. M.D., Florida.

ANSWER.—There is no "most effective" treatment of cerebrospinal syphilis; the character of the remedies used must be adjusted to suit the particular form of syphilis present and the patient under treatment. All the various forms of remedy, including arsphenamine, sulpharsphenamine, mercury and bismuth preparations, are useful. In cases of parenchymatous involvement of the nervous system, tryparsamide (usually accompanied by the administration of mercury) often seems more effective than the arsphenamines; in its use, however, the condition of the ocular fundi must be studied with care as there is some danger of optic atrophy. It is in syphilis of this type, too, that inoculation with the malarial parasites is of value in properly selected cases. Infection with malaria is not without danger; the febrile crises are exhausting and there is a tendency to lighting up old infections, nephritis, and the like. The material for inoculation must be obtained from a patient suffering from malaria; such patients can usually be found in larger clinics dealing with numbers of cases of paresis. Instead of malaria, other infectious agents such as "rat-bite fever" and relapsing fever have also been used, and some physicians are reporting good results with the use of injections of killed typhoid bacilli in doses sufficiently large to cause more or less severe "chills" at regular intervals. Treatment in every case should be controlled by careful serologic studies of the blood and spinal fluid and by observations of the functions of the body organs, especially of the blood pressure and renal function. It is wise to secure expert assistance in diagnosis and supervision of treatment whenever this is possible.

TREATMENT OF CHRONIC HYPERTHYROIDISM WITH COMPLICATIONS

To the Editor:—About five weeks ago I was called to attend a married woman, aged 61, who has a toxic adenoma of the thyroid. She is greatly emaciated. For the past six weeks she has been quite nauseated and has had considerable diarrhea. The lower extremities and subcutaneous tissues of the abdomen are very edematous. There is no fluid in the chest and very little in the abdominal cavity. The heart is somewhat enlarged, with a systolic murmur over the entire precordia. In the fall of 1927 a Minneapolis surgeon refused to operate, saying that she could not survive an operation. All attempts to combat the edema have so far failed. I tried large doses of digitalis but could not continue with them for they intensified the nausea. Small doses apparently are of no value. Theobromine sodium salicylate has also failed. The diarrhea can be partially controlled by large doses of bismuth. I have not given the patient any iodine. There has been no opportunity for basal metabolic studies. Please omit name. M.D., Minnesota.

ANSWER.—The patient evidently has chronic hyperthyroidism of the toxic adenomatous type, with marked cardiovascular and gastro-intestinal manifestations. The disease will progress unless the hyperthyroidism is controlled. Medicines such as digitalis will be without decided or lasting benefit. With bed rest and the administration of compound solution of iodine, 1 cc. three times daily, marked improvement should occur within two or three weeks, at the end of which time a subtotal thyroidectomy by a surgeon experienced in thyroid work should be performed. The patient is, of course, a poor operative risk, and much cardiac injury has undoubtedly occurred; still, treatment as outlined offers a fair chance of success, and it is remarkable how much restitution toward a normal status may occur in some of these seemingly hopeless patients. Iodine is not contraindicated as was formerly supposed in toxic adenomatous goiter; its beneficial results, however, are only temporary.

GASTRIC ULCER IN MAN OF FIFTY

To the Editor:—What is the general prognosis as to "cure" of a case of gastric ulcer and spastic colitis in a man past 50 years of age who is compelled to stay on his feet and work for a living? The symptoms are of nearly ten years' duration. The diagnosis was established after a very thorough x-ray examination covering three days, aided by stomachal analysis, etc. The patient has never had a gastro-enterostomy, but has been a "dieter" for years following various commonly accepted ideas of a strictly professional character. The principal reliance is calcium carbonate, from 100 to 120 grains daily. Dieting is very disappointing. Condiments, cellulose and gas producing foods are absolutely tabu. General prognosis is desired, considering age and necessity of working. M.D., Illinois.

ANSWER.—Prognosis as to the cure of a gastric ulcer in a man, aged 50, with symptoms over a period of ten years, is rather dubious. The patient would possibly be helped more by surgical management than by medical treatment. The operation of choice, if the ulcer is gastric and not duodenal and the ulcer is on the lesser curvature side at the middle or below, would be a subtotal gastrectomy. If operation is refused it would be advisable to examine all possible foci of infection, continue with alkalis in smaller amounts, and to add a small dose of belladonna. On the whole, it is difficult to offer a satisfactory statement of prognosis in this case without knowing more facts as to the condition of the patient.

TREATMENT OF SPASTICITY OF LARGE BOWEL

To the Editor:—Kindly give me treatment for spasticity of the large bowel in a woman, aged 20. Please omit name. M.D., Missouri.

ANSWER.—It is difficult to outline the exact treatment for spasticity of the large bowel without knowing the underlying cause. Often these cases of spasticity of the large bowel are due to appendical involvement. The patient might be put on a nonirritating diet, have small doses of belladonna during the day in the form of the tincture or the extract, light abdominal massage, and a liquid petrolatum retention enema at night, beginning with a small dose and working up to at least 8 ounces to be retained during the night.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMOLOGY: St. Louis, Washington University Dispensary, Oct. 15. Sec., Dr. William H. Wilder, 122 So. Michigan Ave., Chicago.

AMERICAN BOARD FOR OTOLARYNGOLOGY: New York, Oct. 11 and St. Louis, Oct. 15. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Neb.

CALIFORNIA: Sacramento, Oct. 15-18. Sec., Dr. Charles B. Pinkham, 908 Forum Bldg., Sacramento, Calif.

COLORADO: Denver, Oct. 2, 1928. Sec., Dr. Philip Work, 324 Metropolitan Bldg., Denver, Colo.

CONNECTICUT—Healing Arts (Basic Science): New Haven, Oct. 13. Address—State Board of Healing Arts, Box 1895, Yale Station, New Haven, Conn.

DISTRICT OF COLUMBIA: Washington, Oct. 9. Sec., Dr. E. P. Copeland, Suite 110-1801 Eye St., N. W., Washington, D. C.

GEORGIA: Atlanta, Oct. 9-10. Sec., Dr. B. T. Wise, Americus, Ga.

IDAHO: Boise, Oct. 2, 1928. Commissioner of Law Enforcement, Hon. F. E. Lukens, Boise, Idaho.

ILLINOIS: Chicago, Oct. 2-4, 1928. Supt. of Registration, Mr. V. C. Michels, Dept. of Regis. and Edu., Springfield, Ill.

KANSAS: Topeka, Oct. 9. Sec., Dr. Albert S. Ross, Sabetha, Kan.

MICHIGAN: Lansing, Oct. 9-11. Sec., Dr. Guy L. Connor, 707-708 Stroh Bldg., Detroit, Mich.

MINNESOTA — Basic Science: Minneapolis, Oct. 2, 1928. Sec., Dr. E. T. Bell, 110 Anatomy Bldg., U. of Minn., Minneapolis, Minn.

MINNESOTA—REGULAR: Minneapolis, Oct. 16-18. Sec., Dr. A. E. Comstock, 524 Lowry Medical Arts Bldg., St. Paul, Minn.

MONTANA: Helena, Oct. 2-4, 1928. Sec., Dr. S. A. Cooney, Power Block, Helena, Mont.

NEVADA: Carson City, Nov. 5-7. Sec., Dr. Edw. E. Hamer, Carson City, Nevada.

NEW JERSEY: Trenton, Oct. 16. Sec., Dr. Charles B. Kelley, 30 West State St., Trenton, N. J.

NEW MEXICO: Santa Fe, Oct. 8-9. Sec., Dr. W. T. Joyner, Roswell, New Mex.

RHODE ISLAND: Providence, Oct. 4-5. Sec., Dr. B. U. Richards, State House, Providence, R. I.

Kentucky June Examination

Dr. A. T. McCormack, secretary of the State Board of Health of Kentucky, reports the written examination held at Louisville, June 12-14, 1928. The examination covered 11 subjects and included 110 questions. An average of 75 per cent was required to pass. The 74 candidates examined all passed. Three physicians were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Chicago Medical School		(1928)*	84
Southwestern Homeopathic Medical College and Hospl.		(1899)†	77
University of Louisville School of Med.	(1927) 87, (1928) 78, 79, 79, 79, 80, 80, 80, 81, 81, 81, 81, 82, 82, 82, 82, 83, 83, 83, 83, 83, 84, 84, 84, 84, 85, 85, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 86, 87, 87, 87, 87, 88, 88, 88, 88, 88, 88, 88, 89, 89, 89, 89, 89, 90, 93		
Eclectic Medical College	(1928) 81, 83, 84, 85, 86, 86		
University of Cincinnati College of Med.	(1928)* 80, 84, 84, 85, 89		
Temple University School of Medicine		(1927)	87
Medical College of Virginia		(1928)	86

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Indiana University School of Medicine		(1927)	Indiana
University of Cincinnati College of Medicine		(1927)	Ohio
Meharry Medical College		(1927)	Tennessee

* Not a graduate until 1929.
† Licensed in 1898 without examination.

Vermont June Examination

Dr. W. Scott Nay, secretary of the Vermont Board of Medical Registration, reports the written examination held at Burlington, June 20-22, 1928. The examination covered 12 subjects and included 90 questions. An average of 75 per cent was required to pass. There were 28 candidates examined and all passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine		(1922)	86.9
University of Vermont College of Medicine	(1928) 83, 83.4, 83.8 86, 86.6, 86.7, 87.1, 87.3, 87.6, 88.1, 88.2, 88.2, 89.7, 90.4, 90.4, 90.4, 90.9, 91.1, 91.5, 91.8, 91.8, 92.1, 92.6, 97.7		
McGill University Faculty of Medicine	(1928) 86.1, 87.6, 91.8		

Book Notices

SURGICAL OPERATIONS ON PRESIDENT CLEVELAND IN 1893 TOGETHER WITH SIX ADDITIONAL PAPERS OF REMINISCENCES. By William W. Keen, M.D. Cloth. Price, $1.50. Pp. 251. Philadelphia: J. B. Lippincott Company, 1928.

In this volume Dr. Keen has collected seven important essays, which are a reflection of his marvelous career and of his views on medicine. The famous operation on President Cleveland is a dramatic story; the biographic notes concerning Pasteur and S. Weir Mitchell are well done; the essays entitled "Sixty Years of Surgery," "What it Costs to Become a Doctor," and "The Battle of Bull Run" are fascinating expositions. As a reflection of ninety-two years of a life devoted largely to medicine, the volume should have immediate interest for every medical reader.

HANDBUCH DER SOZIALEN HYGIENE UND GESUNDHEITSFÜRSORGE. Herausgegeben von A. Gottstein, A. Schlossmann, und L. Teleky. Band IV: Gesundheitsfürsorge soziale und private Versicherung. Von L. Ascher, H. Behrendt, H. Dersch und anderen. Band V: Soziale Physiologie und Pathologie. Von R. Allers, A. Beythien, A. Czellitzer und anderen. Paper. Price, 63 marks and 57 marks. Pp. 874, with 42 illustrations, and pp. 807, with 77 illustrations. Berlin: Julius Springer, 1927.

The fourth volume of this well known handbook consists chiefly of descriptions and critical monographs dealing with the care of the defective and dependent members of the community. Measures of infant welfare are given full consideration, with especial emphasis on the combating of infant mortality. Then follow chapters on the care of young children, on children of school age, on the care of the morally and mentally defective, and on the community responsibilities toward the crippled, the blind and the deaf mutes. There is a comprehensive discussion of social insurance by Dersch and a special article on the position of the physician in the German insurance system.

The fifth volume treats of such topics as work, fatigue and rest; the influence of dwelling places on health; the effect of natural and "artificial" climate; the pathology, physiology and control of nutritional conditions, and a series of brief articles on the "sociology" of diseases of infants and diseases of women, and on the "sociology" of skin diseases and eye diseases. In some of the articles the statistics are badly time-worn and certain statements quite out of date, but on the whole they are fairly abreast of current nowledge. Although much of the descriptive and illustrative material is drawn, as natural, from German sources, these volumes, like the preceding ones, will have a wide appeal. They are indispensable for all students interested in the sociological aspects of public health problems.

THE WILLIAM SNOW MILLER FESTSCHRIFT. Contributions by the Friends, Associates and Pupils of Doctor William Snow Miller, Assembled on the Occasion of his Seventieth Birthday, March 29, 1928. Paper. Pp. 83-238, with illustrations. Menasha, Wisconsin: George Banta, 1928.

On the occasion of his seventieth birthday, the pupils of Dr. Miller prepared essays in his honor, which have been here collected in a single cover. The nature of the essays reflects largely the historical interests of the author and his numerous contributions to medical letters. Dr. Miller has been fortunate in his pupils, as they have been fortunate in their teacher. His own contributions to scientific medicine, numbering more than 100 and covering primarily the fields of anatomy and of history, are a reflection of a fine life in the service of medicine.

DIE LABORATORIUMSMETHODEN DER WIENER KLINIKEN. Herausgegeben von H. K. Barrenscheen, und R. Willheim. Paper. Price, 44 marks. Pp. 800, with 123 illustrations. Leipzig: Franz Deuticke, 1928.

Here is an encyclopedia of laboratory technic, a compilation of methods provided by leading physicians of Vienna. The work concerns particularly the study of the blood, the investigation of venereal disorders, tumor diagnosis, studies of the feces and urine and other excretions, basal metabolism, laboratory methods in gynecology, and the uses of photography. Obviously, it is a most valuable book of reference; the reviewer knows of no English volume of similar scope, not excepting the work of Sahli, translated into English. The book is handsomely illustrated, and the tests authenticated by direct references to their originators.

Die offene Lungentuberkulose des Schulalters (Verlauf, Entwicklung. Kollapsbehandlung). Von Dr. Georg Simon. Paper. Price, 9.75 marks. Pp. 107, with 60 illustrations. Leipzig: Johann Ambrosius Barth, 1928.

This concerns open tuberculosis in children of school age, the latter being reckoned to end at 18 years. Evidently written for the German public, the book discusses the propriety of establishing separate hospitals for the care of the open cases. Simon takes the stand that the incidence is overestimated and that all cases of children's tuberculosis should be treated under one roof, so to speak. He considers manifestations of tuberculosis in children as a single entity whose various forms are to be studied with reference to one another. As to the incidence, the author quotes the figures of Bluemel: mortality, 1925, 2,600, of which 2,000 were of the pulmonary form, with about 4,000 living patients with open tuberculosis. Simon, while admitting the serious prognosis attending tuberculosis of the pulmonary form in children, is not pessimistic as to the outcome in all cases. Indeed, he offers case records which show remarkable recoveries in children who were under observation and treatment for as long as nine years. Others regained health after shorter periods of treatment; of these, a number are reported to be now in good health. Pneumothorax is regarded by the author to be of the highest value in the treatment of this class of consumptives. Its use should be controlled by the same indications as in the adult case. The book contains many roentgenograms and case records, which are well worked up. The whole material on which Simon bases his conclusions consists of 445 cases.

Recent Advances in Chemistry in Relation to Medical Practice. By W. McKim Marriott, B.S., M.D., Dean and Professor of Pediatrics, Washington University School of Medicine. Lectures of the San Diego Academy of Medicine, Series of 1927. Cloth. Price, $2.25. Pp. 141, with 12 illustrations. St. Louis: C. V. Mosby Company, 1928.

In 1926 the San Diego Academy of Medicine established a lecture course, planned to keep the general practitioners abreast of recent advances in the fundamental medical sciences. It is doubtful whether any better series could have been planned than is represented in the book by Dr. Marriott. Here in six lectures are available the facts of modern chemistry of importance to the physician, a discussion of acidosis and alkalosis, the chemistry of the blood, foods and metabolism and a few of the things that are definitely known relative to the glands of internal secretion. As night be expected, the tone throughout is scientifically conservative and therefore dependable.

Clinical Medicine. By Oscar W. Bethea, M.D., Ph.G., F.C.S., Professor of Therapeutics, Tulane Graduate School of Medicine. Cloth. Price, $7.50 net. Pp. 700, with 6 illustrations. Philadelphia: W. B. Saunders Company, 1928.

Here is a single volume work on practice that can be lifted without a crane and of which the index is one thirteenth as long as the text. Moreover, both sentences and paragraphs are admirably short. Such qualities allow one to predict a usable book. The author constructed it out of his many years of experience in practice as well as in the teaching of clinical medicine and therapeutics to undergraduate and postgraduate students at Tulane. He has kept in mind, throughout his teaching and his writing, that "the great majority of patients must be treated in homes and under conditions offering limited facilities." Therefore, it is a useful as well as a usable book. Unproved theory has scarcely any place in the volume. Nevertheless, the work is up to date and courageous. The eighteen line paragraph on vaccines in whooping cough begins as follows:

> The actual value of these in the treatment of pertussis has not yet been definitely established. My personal opinion is that they have a distinct field of usefulness.

The paragraph on special treatment of pernicious anemia reads as follows:

> At the present time a new plan of treatment is being employed that promises much, though it is too soon to make any definite statement as to its permanent value. This is the feeding of fresh liver. It is given rare or raw in daily amounts of 4 to 6 ounces (120 to 180 Gm.). The liver of young cattle or sheep are principally used. The results so far have been most encouraging.

This is what the practitioner wants to know: whether the remedy is worth trying and, if so, how much of it to use. In later editions, this paragraph can be either omitted or amplified to include liver extract, as events may dictate.

At first glance the material on serum treatment of scarlet fever seems deficient: It reads:

> The serum obtained from horses immunized against a scarlatinal hemolytic streptococcus is the product most commonly used. It is also on the market in concentrated form.
>
> Human blood serum from convalescent patients has been employed at times in the past.

However, what more is justified unless one can list many preparations with dosage and method of administration, after the manner of New and Nonofficial Remedies? The impression is that this is a practitioner's book more than a student's text. It is not a compend. It covers about a hundred common diseases, handily, easily and informatively.

Modern Methods of Treatment. By Logan Clendening, M.D., Associate Professor of Medicine, Lecturer on Therapeutics, Medical Department of the University of Kansas. Second edition. Cloth. Price, $10. Pp. 815, with 95 illustrations. St. Louis: C. V. Mosby Company, 1928.

Additions to therapy developed in recent years have made necessary the revision of this volume, first published in 1924. In his preface the author calls attention to the advances that have been made, including descriptions of the Minot-Murphy diet in pernicious anemia, of scarlet fever antitoxin, of the parathyroid hormone, of the ovarian hormone of Allen, Pratt and Doisy, of ephedrine sulphate, of merbaphen and ammonium chloride in edema, of the malaria treatment of neurosyphilis, of iodized oil instillations in chronic lower respiratory infections, of the metabolism of obesity, of spirochetal pulmonary infections, of the use of peptone in migraine, and of phenylhydrazine in polycythemia. Many chapters have been rewritten, and others revised. The new pharmacopeia has been brought into the work, which is one of the most useful in its field. Special chapters by many of the author's associates serve to make the work complete in fields in which he has preferred to depend on others. An occasional typographic error in the spelling of a name seems to be one of the chief faults of the volume. Here and there are paragraphs reminiscent of the Clendening who wrote "The Human Body." These philosophical excursions add readability to what would otherwise be simply a good textbook.

Idiosyncrasies. By Sir Humphry Rolleston, Bart., K.C.B., F.R.C.P. Boards. Price, 2/6 net. Pp. 119. London: Kegan Paul, Trench, Trubner & Company, Ltd., 1927.

In a small handbook that can be carried in the pocket, the author provides a succinct account of our present knowledge of hypersensitivity and idiosyncrasies. Here the reader will find a good exposition not only of anaphylaxis as reflected in asthma and hay-fever, but also of idiosyncrasies to drugs and psychologic and physiologic sensitivities. As with all of the writings of Sir Humphry Rolleston, the book is easily readable.

The Rôle of Scientific Societies in the Seventeenth Century. By Martha Ornstein. Cloth. Price, $3. Pp. 308. Chicago: University of Chicago Press, 1928.

This volume represents in every sense of the word a labor of love. It was prepared by its author as a literary investigation, and is published by her friends twelve years after her death as a testimonial of their abiding affection and admiration. The book is prefaced with an introduction by the noted historian James Harvey Robinson. Not only are there excellent biographic statements concerning many of the famous scientists of the seventeenth century, including Galileo and Harvey, but also chapters relative to the creation of the learned societies and scientific journals and studies of the great universities. This exceedingly interesting volume should find a place in the library of every student of the history of science and the history of medicine.

Entstehung und Entwicklung der Lungenschwindsucht des Erwachsenem. Von Franz Redeker und Otto Walter. Paper. Price, 15 marks. Pp. 143, with 105 illustrations. Leipzig: Curt Kabitzsch, 1928.

This monograph, one of the series of the Würzburger Abhandlungen aus dem Gesamtgebiet der Medizin, is based on the clinical and roentgenologic studies of the authors. The most important types of pulmonary tuberculosis are discussed from a diagnostic and roentgenologic standpoint, with particular regard to early diagnosis and treatment. The problems

concerning pathogenesis and further development are indicated and discussed, and the new teaching is contrasted with the old. The results of investigations carried on by others in recent years and scattered through the literature are reviewed. This is an able and practical treatise of particular interest to internists and to specialists in tuberculosis.

THE NOSE, THROAT AND EAR. By John F. Barnhill, M.D., F.A.C.S., Professor of Surgery of the Head and Neck, Indiana University School of Medicine. Cloth. Price, $7.50. Pp. 604, with 452 illustrations. New York: D. Appleton & Company, 1928.

Here is a volume planned primarily as a textbook for medical students. It serves thereby equally well as a book of references and a reminder for the general practitioner. The volume is handsomely illustrated and exceedingly well printed. It follows the classic lines in its assembling. The tone throughout is conservative and the therapy sound. The book may well take its place among the most suitable guides in this field.

CONTRIBUTIONS TO MEDICAL SCIENCE. Dedicated to Aldred Scott Warthin. Willard J. Stone, Editor. Carl Vernon Weller, Chairman of Editorial Committee. Leather. Price, $10. Pp. 720, with illustrations. Ann Arbor: George Wahr, 1927.

This handsome volume is a recognition of the training given by Prof. Aldred Scott Warthin of the University of Michigan during a period of thirty-five years to medical students who have passed through that university. It is dedicated to Professor Warthin on his sixtieth birthday. The papers have been contributed by students from each of the thirty-five classes to which he taught pathology from 1892 to 1926. The introductory note by Victor C. Vaughan explains Dr. Warthin's service, and an appreciation by Dr. George Dock interprets it. The essays that follow cover a tremendous range in the field of medicine and are by authors who have distinguished themselves by their numerous contributions. The book is completed by a bibliography of the writings of Dr. Warthin, including some hundreds of titles and a range of activity that makes one marvel at its scope.

HEALTH! "THE PARAMOUNT ASSET." By George Parrish, M.D., Health Commissioner, Los Angeles. Cloth. Price, $2.50. Pp. 262, Los Angeles: The Author, 1928.

The author, who is health commissioner of the city of Los Angeles, has here assembled such material as forms the basis of health bulletins, newspaper paragraphs and other material conferred by health officers on the public. The point of view is sound and the material accurate; much of it is quotation. The book may be recommended to any layman interested in general information on health. Its rather fragmentary character makes the book not so attractive as some of the well organized books covering a similar field.

PHOTOMETRIC CHEMICAL ANALYSIS (COLORIMETRY AND NEPHELOMETRY). Volume I. Colorimetry. By John H. Yoe, Ph.D., Professor of Chemistry, University of Virginia. Cloth. Price, $8.50 net. Pp. 771, with 72 illustrations. New York: John Wiley & Sons, Inc., 1928.

The rapid strides made in the field of analysis by color reactions in the last decade have been phenomenal. The accuracy and the speed of many of the methods used in colorimetry and nephelometry leave little to be desired. Unfortunately, for the average worker such references have been scattered throughout the literature and have not been readily available. The author has undertaken to bring together the scattered literature in the field for "in view of the widespread application of colorimetry and the extensive development of nephelometry, it seems to the author that the time is now ripe for the theoretical consideration and correlation that these two sister methods of chemical analysis deserve." The author, it appears, has performed his mission in a creditable manner. The book is intelligibly and well written. The value of the work is further enhanced by the cooperation of a number of eminent workers in the field of colorimetric analysis. The manner of bringing together the bibliography is especially to be commended. Under a carefully indexed list of subjects, a number of references and a short summary of each article is given. The book is divided into six parts: (1) general principles, apparatus, calculations, calibration and correction, curves, errors, colloids and directions for using a precision colorimeter; (2) inorganic; (3) organic; (4) biologic; (5) bibliography; (6) tables. The biologic section is devoted to a detailed description of the many commonly used methods of blood and urine analysis, which may be found in many of the laboratory manuals of blood and urine analysis. The only advantage derived from the presentation within the present volume is that they are brought under the general subject of colorimetry. Chapter XIX, on hydrogen ion, is not in keeping with the good features of the rest of the book. The material has been taken from a treatise on hydrogen ion, published by a chemical supply house. Instead of giving directions for the preparation of the indicators used in hydrogen ion concentration determination, reference is made to the prepared dye solutions of the supply house. It might be more desirable to give directions for preparing the indicators from dyes bought in the open market rather than to mention the products of one dealer. To the medical profession, especially, scientific instruction from commercial sources is always looked on askance and should not be lifted bodily. An obvious error, which will undoubtedly be corrected in future printing, occurs in the chapter on calculation of results: "percentage of test substance in standard—0.25 gram." For those who have occasion to do analysis of almost any kind, the volume is a valuable work because (1) it contains a vast amount of carefully compiled material, and (2) the abundance of references to the original literature gives the research chemist a start toward further researches.

APPLIED BIOCHEMISTRY. By Withrow Morse, Ph.D., Professor of Physiological Chemistry and Toxicology, Jefferson Medical College. Second edition. Revised with cooperation of Joseph M. Looney, M.D., Assistant Professor of Physiological Chemistry, Jefferson Medical College. Cloth. Price, $7 net. Pp. 988, with 930 illustrations. Philadelphia: W. B. Saunders Company, 1927.

Since the last review in THE JOURNAL the text has been completely reset, and the uncritical statements and errors appearing in the first edition have been practically eliminated. The chapter on glucids, the chemistry of insulin and thyroxin, has been revised. Tables containing the molecular weights of protids have been introduced, and the researches of Harrington and Barker have been included. As in the previous edition, the text is accompanied by many type experiments and procedures, and illustrations of various apparatus. The nomenclature (i. e., glucid, protid, lipid) of the "International Union of Pure and Applied Chemists," the excellent lithographs of contemporary men working in physiologic chemistry and related fields, along with a few deletions and additions, have been retained. The bulk of the remaining subject matter, including the appendix, appears to be much the same as in the preceding edition and, as far as medical "applications" are concerned, "the book is not strikingly different from others." It is, however, a good book to recommend to be added to the collection of biochemical treatises. The indexing is much better than in the average textbook on this subject.

A COLLEGE TEXTBOOK OF HYGIENE. By Dean Franklin Smiley, A.B., M.D., Medical Adviser and Assistant Professor of Hygiene in Cornell University, and Adrian Gordon Gould, Ph.B., M.D., Assistant Medical Adviser and Assistant Professor of Hygiene in Cornell University. Cloth. Price, $2. Pp. 333, with 75 illustrations. New York: Macmillan Company, 1928.

Instruction in human hygiene is given in the majority of our colleges and universities in too haphazard fashion. Many of them attempt to give instruction in sex hygiene, but unfortunately this is usually set apart from other phases of body care. Smiley and Gould have attempted to produce a textbook for college courses in hygiene and have treated the subject in a logical and eminently sensible way. Following some introductory chapters dealing with the fundamentals of heredity, infection and immunity, the various systems of the body are briefly and adequately described and the care of each system is discussed. It is to be regretted that more definite suggestions could not be made concerning the college student's diet. This, of course, is not always in the control of the student; but modern college students generally get about what they sincerely demand. The section on recreation and play should be read by college officials and by college graduates whose main interest in their alma mater is in athletic teams. The book is highly recommended and should stimulate the interest of college students in the functions and care of the body.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

Neue Deutsche Klinik. Handwörterbuch der praktischen Medizin mit besonderer Berücksichtigung der inneren Medizin, der Kinderheilkunde und ihrer Grenzgebiete. Herausgegeben von Prof. Dr. Georg Klemperer, und Prof. Dr. Felix Klemperer. Band I: Abdominaltyphus-Balneologie. Cloth. Price, 40 marks. Pp. 783, with 179 illustrations. Berlin: Urban & Schwarzenberg, 1928.

A new German medical encyclopedia begins!

Handbuch der inneren Sekretion. Eine umfassende Darstellung der Anatomie, Physiologie und Pathologie der endokrinen Drüsen. Herausgegeben von Dr. Max Hirsch. Lieferung 6. Band III. Paper. Price, 22 marks. Pp. 1489-1762. Leipzig: Curt Kabitzsch, 1928.

Another number in this system, concerning the possibilities of internal secretion from the skin; the secretions of the pancreas, and relation of internal secretions to the eye.

Introduction to the Technic of Child Analysis. By Anna Freud. Nervous and Mental Disease Monograph Series No. 48. Boards. Price, $1.50. Pp. 59. New York: Nervous and Mental Disease Publishing Company, 1928.

A statement of method and underlying theory for those who want to find out what the child is disturbed about.

The Blood Plasma in Health and Disease. By J. W. Pickering, D.Sc., Lecturer on Hæmatology, University of London, King's College. Cloth. Price, $4.25. Pp. 247. New York: Macmillan Company, 1928.

Thorough exposition of blood and its changes.

Modern Medicine: Its Theory and Practice in Original Contributions by American and Foreign Authors. Volume VI: Diseases of the Nervous System—Diseases and Abnormalities of the Mind. Edited by Sir William Osler, M.D., F.R.S. Re-edited by Thomas McCrae, M.D., Professor of Medicine in the Jefferson Medical College, Philadelphia, and Elmer H. Funk, Clinical Professor of Medicine, Jefferson Medical College, Philadelphia. Third edition. Cloth. Price, $9. Pp. 964, with illustrations. Philadelphia: Lea & Febiger, 1928.

Die Technik der Wassermannschen Reaktion und die Technik und praktische Bedeutung der Sachs-Georgi-Reaktion, der Aktivmethode von Bruck, der Ballungsreaktion von R. Müller und der Trübungs-reaktionen von Dold und Meinicke. Von Dr. August Pochlmann, a. o. Universitats-Professor und I. Assistent der dermatologischen Universitäts-Poliklinik in München. Third edition. Paper. Price, 6.40 marks. Pp. 131. Munich: Rudolph Müller & Steinicke, 1928.

On the Dysenteries of India. With a Chapter on Secondary Streptococcal Infections and Sprue. By Hugh W. Acton, Lieut-Col., I. M. S., Professor of Pathology and Bacteriology, Calcutta School of Tropical Medicine and Hygiene, and R. Knowles, Lieut-Col., I. M. S., Professor of Protozoology, Calcutta School of Tropical Medicine and Hygiene. Cloth. Price, Rs. 7/8. Pp. 178, with 33 illustrations. Calcutta: Thacker, Spink & Company, 1928.

Efficiencies of Painters' Respirators Filtering Lead Paint, Benzol and Vitreous Enamel Sprays. By S. H. Katz, E. G. Meiter and F. H. Gibson. Treasury Department. Public Health Bulletin No. 177. Prepared by Direction of the Surgeon General. Paper. Price, 15 cents. Pp. 27, with illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1928.

State of New York—Thirty-Second Annual Report of the Board of Visitors of the Kings Park State Hospital at Kings Park, N. Y., to the Department of Mental Hygiene for the Year Ending June 30, 1927. Paper. Pp. 61. Utica: State Hospitals Press, 1928.

Experimental Rickets: Investigations on the Growth-Promoting, Fat-Soluble Vitamin, Specially Elucidated by Its Relation to Experimental Rickets. By Poul Freudenthal. Paper. Pp. 235, with illustrations. Copenhagen: Levin & Munksgaard, 1927.

Contributions to the Characterization and Systematic Classification of Bac. Proteus Vulgaris (Hauser). By Otto Moltke. Paper. Pp. 196, with illustrations. Copenhagen: Levin & Munksgaard, 1927.

Lyset og experimentel rachitis. Sammenlignende undersøgelser over fosfor- og calciumstofskiftet ved forskellig therapeutisk paavirkning. Af Poul Schultzer. Paper. Pp. 217. Copenhagen: Levin & Munksgaard, 1927.

Final Report of the League of Nations International Commission on Human Trypanosomiasis. Health Organization, League of Nations. Paper. Price, $5. Pp. 392, with illustrations. Geneva, 1928.

Tratamento geral das infecções puerperaes. These: Apresentada á Faculdade de Medicina de Porto Alegre. Pelo Dr. José Candido de Borba Lupi, Natural de Bagé. Paper. Pp. 111. Porto Alegre, 1927.

Études sur les nævi pigmentaires de la peau humaine (melanoblastomes bénins). Par A. Kissmeyer. Paper. Pp. 175, with 29 illustrations. Paris: Amédée Legrand, 1927.

Dansk Kirurgisk Selskab's Forhandlinger, 1926-1927. Redigeret af Selskabets Sekretær Ove Wulff. Paper. Pp. 63, with illustrations. Copenhagen: Levin & Munksgaard, 1927.

Clinical Investigations into the Pathogenesis of Infantile Tetany. By Paul Drucker. Paper. Pp. 198, with illustrations. Copenhagen: Levin & Munksgaard, 1927.

State of New York — Thirty-Ninth Annual Report of the Department of Mental Hygiene, July 1, 1926, to June 30, 1927. Paper. Pp. 270. Albany, 1928.

Biennial Report of the Louisiana State Board of Health to the Legislature of the State of Louisiana, 1926-1927. Paper. Pp. 357. New Orleans, 1928.

Undersøgelser over de hos mennesket forekommende former af bacterium coli. Af Otto Mikkelsen. Paper. Pp. 150. Copenhagen: Kandrup & Wunsch, 1927.

Safety First. By George Draper, M.D. Paper. Pp. 22. New York: Croydon Press, Inc., 1928.

Medicolegal

Compensability of Hernia

(Maryland Casualty Co. v. Robinson (Va.), 141 S. E. 225)

Robinson, a state employee, was injured while engaged in moving a metal shelf of books in the library building. The injury occurred between November 22 and 26. Robinson was conscious of inconvenience and soreness in his left side after the date of the injury. February 7, while undressing, he felt a sharp pain in the groin, and discovered that a knot had appeared. The next day he consulted a physician. The trouble was diagnosed as a hernia. An operation was then successfully performed, March 2. Notice of the claim was given the employer immediately after the employee discovered the hernia. Proceedings were begun under the workmen's compensation act against the employer and the insurer. The evidence was presented before the Industrial Commission of Virginia, and the employer and insurer contended: first, that the time of the notice of the accident did not comply with the requirements of the act; second, that the evidence did not satisfy the requirements of section 2 of the act, to show that the hernia was due to an accident; and third, that medical benefits under the act were limited to sixty days after the accident.

As to the first contention, section 23 of the workmen's compensation act (Acts 1918, C. 400) provides in effect that notice of the injury must be given "immediately on the occurrence or as soon thereafter as practicable." The commission decided that the claimant, Robinson, was, under the act, excused from giving notice at an earlier date; that the notice was given as soon as practicable and was sufficient. The requirement of notice necessarily implies knowledge of the injury for which claim is made. Here it was impossible and impracticable to give the notice before the claimant first learned of the hernia through the external manifestation. Nor was the employer in any way prejudiced by the delay.

With respect to the second contention, section 2, subsec. (e), of the workmen's compensation act, reads: "In all claims for compensation for hernia resulting from injury by accident arising out of and in the course of employment, it must be definitely proven to the satisfaction of the Industrial Commission: first: that there was an injury resulting in hernia; second: that the hernia appeared suddenly; third: that it was accompanied by pain; fourth: that the hernia immediately followed an accident; fifth: that the hernia did not exist prior to the accident for which compensation is claimed."

The commission found from the evidence that all five requisites were met. As to the second, that the hernia appear suddenly, the commission ruled that the connection between

the injury which was the cause and the hernia which was the consequence was sudden, and that the hernia which later became so apparent was the result of the accidental injury without any supervening cause. The claimant could not be charged with knowing that he had a hernia until after the protrusion developed and he had taken expert advice.

As to the third contention, section 26 of the act as amended by Acts of 1920, C. 176, provides that the employer shall furnish necessary medical attention free of charge for sixty days after the accident. The commission, however, decided that if, in hernia cases like this, the right to surgical attention were limited to sixty days, and during the period when the claimant was ignorant of the nature of his injury, it would result in denying a claimant the benefits of the act. The act provides further that the claimant is in addition entitled to such surgical and hospital service and supplies as may be deemed necessary by the attending physician or the commission, and under this provision, which was meant for cases like this, the claimant was entitled to reasonable surgeon's services. The Supreme Court of Appeals of Virginia sustained the rulings of the industrial commission.

Compulsory Physical Examination of Criminal

(People v. Dennis (N. Y.), 226 N. Y. S. 689)

The defendant was convicted of the offense of operating a motor vehicle while intoxicated. Immediately following his arrest, a physician was brought to the police station to determine whether or not he was intoxicated. The examination was compulsory. In reversing the conviction of the lower court, the Supreme Court of New York said that section 6, article 1, of the state constitution provided that no person shall be compelled in any criminal case to be a witness against himself and that while no case bearing on the question directly had been brought to the court's attention, it had been held that compulsory finger printing before conviction was in violation of the constitutional mandate that no person shall be compelled to be a witness against himself in a criminal case. If finger printing before conviction, the court argued, was unconstitutional, forcible examination of an accused was likewise to be condemned.

Enforceability of Award for Medical Fees

(Standard Paving Co. v. Lemmon (Okla.), 263 Pac. 140)

The employee was injured, June 28, 1923, and filed his claim for compensation with the Oklahoma Industrial Commission, August 22 following. The commission made a final order of award to the employee, Dec. 10, 1923. Dr. Lemmon performed the medical services for the employee at the verbal request of the employer. These services terminated, Nov. 30, 1923. Dr. Lemmon filed an application for compensation for the services with the industrial commission, July 10, 1925, nearly two years after the injury and more than a year after the performance of the last service. Proceedings were instituted by the physician before the state industrial commission, and it directed the employer to pay him $306 for attending the employee and the employer appealed.

The first question presented to the supreme court of Oklahoma was whether the state industrial commission had jurisdiction to make an award to a physician and enforce such award for services rendered an injured employee performed at the verbal request of employer. With respect to the question of jurisdiction, the court said: "While the provisions may not be as clear as they could have been, it seems to us that it was the intention of the legislature to confer upon the industrial commission the power to make awards to a physician or surgeon for medical services, and to enforce the same in the same manner as is provided for the enforcement of compensation payments. The only exception is in the proviso that 'the foregoing provision, relating to approval and enforcement, shall not apply where a written contract exists' between the employer and the physician." This clearly indicates that it shall apply in all cases in which no written contract exists, and in this case it is admitted that the physician was orally requested to perform the services. Thus the commission had jurisdiction to make and enforce the award.

The employer contended also that the claim of the physician was barred under the following section of the workmen's compensation act: "The right to claim compensation shall be forever barred, unless, within one year after the injury, a claim for compensation thereunder shall be filed with the commission." But the supreme court held that this section did not apply to fees of a physician. The words as used in the act referring to charges for a physician are different from compensation payments. To say that the act required the physician to file his claim within one year from the injury would lead to an absurdity, because, in many cases in which the employee suffers from an injury for more than a year, a physician may not be employed until after a year from the injury; and to say that he must file his claim within one year, when as a matter of fact, he had no claim, would of course be absurd. Accordingly, the decree of the industrial commission was affirmed.

Abandonment of Patient; Joint Liability

(Bolles v. Kinton et al (Colo.), 263 Pac. 26)

The defendant in error, Mrs. Kinton, injured her hip. She employed Bolles, an osteopath, to treat her, and Bolles immediately called in Starks, another osteopath. They made a diagnosis of contusion, decided that the use of the roentgen ray was unnecessary, and although the leg was perceptibly shortened and the foot everted they continued treatment as for contusion for about seven weeks. Then they were discharged and other practitioners employed. A roentgenogram was then made and a fracture discovered. Bone-grafting was done to unite the ends of the broken bone. Mrs. Kinton sued Bolles and Starks and obtained a verdict for $6,250. Bolles appealed.

The plaintiff in error, Bolles, claimed that there was no joint liability; that she ceased her connection with the case after a few visits. The supreme court of Colorado, however, held that since both osteopaths were employed by the patient together, made the diagnosis together, and treated the patient together, without withdrawal by or discharge of either, they must both be regarded as responsible for negligence, if there was any. The court held that a physician cannot discharge a patient and relieve himself of responsibility for the case, by simply staying away without notice to the patient, and that no notice was given in this case.

The plaintiff in error claimed, also, that a physician is required to diagnose and treat according to the practice of the school of medicine to which he belongs and that no evidence was offered to show that this degree of skill and care was not exercised. The court held, however, that this lack of skill and care was established by the plaintiff in error and Starks themselves when they testified that the osteopathic diagnosis regards shortening and eversion as strong evidence of fracture and that osteopathic practice calls for the use of the roentgen ray in cases of doubt.

Dr. P., who performed the bone-grafting operation, testified that out of the fee stated in his bill, $1,000, he expected to pay two physicians in addition to the two assistants mentioned in the bill. The defendants, in the lower court, introduced his bill showing that a part of the amount claimed was to pay two assistants but showing nothing about services by any one else. Section 4566, Compiled Laws of Colorado, provides that "If any person holding a license to practice medicine . . . issued by the state board of medical examiners . . . shall make a joint or lump or gross charge or present a bill or request a payment for a joint or lump or gross account of services rendered by him as a surgeon . . . without itemizing the amount charged or requested for the services rendered by each physician . . . whose services are included in such joint or lump or gross charge or bill . . . such physician shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by" fine or imprisonment. The plaintiff in error, defendant below, contended the bill violated this provision of the law because it did not specify all those who were to share in the amount stated. They contended that therefore no part of the amount claimed could be made the basis of any damages to be recovered by the patient. The court stated that the only way that conclusion could be reached would be to hold that by reason of the unlawful form of the bill the defendant in error was no longer liable for the services of her doctors. The court

doubted whether such proposition was true, but did not decide the question, holding that since the osteopaths introduced the bill in evidence, they could not assign error for its admission.

In the trial court, counsel for the defendant in error was permitted to ask the jurymen whether any of them were interested in a certain insurance company. The supreme court held that defendant in error had a right to ascertain the facts as to their interest and even though counsel may have had a desire to let the jury know that the two osteopaths carried liability insurance, the court could not see how the matter could have been treated more fairly. All arguments with respect to the matter were conducted in the absence of the jury and the trial court restricted the examination on this point to the one simple question.

The supreme court could find no error in the case and the judgment of the lower court was affirmed.

County Not Liable for Injury to Inmate of Insane Hospital

(Johnson v. Hamilton County et al. (Tenn.), 1 S. W. (2d) 528)

The plaintiff, Johnson, was committed to the Hamilton county hospital for the insane in Tennessee. The superintendent, Bork, locked him in a cell in which some razor blades had been left. Laboring under an insane delusion that such action was a prerequisite to his eternal salvation, Johnson inflicted serious and permanent injuries on himself with the razor blades. Johnson instituted an action for damages against the superintendent, Bork, and against the county. Bork was charged with negligence in that he knew or by the exercise of ordinary prudence could have known of the insane condition of Johnson and that he knowingly, carelessly, negligently and wilfully placed and permitted Johnson to be placed and detained in the locked cell where the razor blades were present. Negligence was charged to the county in that it failed to build, erect and prepare a safe place for the confinement of insane patients, and that it permitted the place to be dangerous and unsafe on account of the presence of the razor blades where insane patients had access to them. The circuit court of Hamilton county dismissed the suit on demurrer, both as to Bork and as to the county, holding that the declaration stated no cause of action against either.

In remanding the case against Bork for a new trial, the supreme court said that the declaration stated a good cause of action against him in that it charged that he had personal knowledge of the condition of the plaintiff, of the presence of the razor blades in the room, and that the plaintiff would probably use the razor blades to his injury. No less can be required of the superintendent of a hospital receiving insane patients than that such insane patients shall not be knowingly and willingly placed in contact with means and instrumentalities for doing injury to themselves. But as to the county, the supreme court upheld the action of the circuit court, saying that the mere presence of razor blades in the cell of an insane person could by no stretch of imagination be a defect in the construction of the building, and that, even had there been a defect in construction, no case had been cited to support a holding that a county maintaining a hospital for the benefit of its citizens who might become insane would be liable in damages for an injury caused by such defect. Since the negligence complained of was committed by an agent or employee, the county was not liable.

Evidence of Violating Medical Practice Act

(State Board of Medical Examiners v. Hirsch (N. J.), 140 Atl. 312)

The defendant was charged with practicing medicine and surgery without a license. At the trial, witnesses testified that he had a sign, "Dr. Frank Hirsch," and office hours on his door; that in his office was a treating room; that he had literature describing various diseases and recommending treatment; that he diagnosed or undertook to diagnose their troubles, and that he treated them somewhat after the manner of a chiropractor. The defendant did not pretend to be a chiropractor. He was convicted by the trial court and appealed to the supreme court of New Jersey to reverse the conviction because on one or two occasions a licensed chiropractor was present. The supreme court held that the legal effect of that fact need not be considered because there were occasions when the defendant diagnosed and treated witnesses when this licensed chiropractor was not present. Considering all of the testimony, the supreme court thought the conviction was justified.

Objective Injury Does Not Require Expert Testimony as to Pain

(Tinker v. Schornhorst (Okla.), 263 Pac. 645)

The defendant in error, Schornhorst, sustained three broken ribs and an injured kidney in an automobile accident caused by the negligence of the plaintiff in error. Suit was brought for damages. At the trial there was no expert testimony. The court instructed the jury to "take into consideration the nature and extent of plaintiff's injuries, whether they are permanent, physical pain if any, caused by such injury, the loss of time from work, doctor bills, etc.," in determining the amount of the verdict. Damages for $1,500 were allowed. In appealing to the supreme court of Oklahoma, the plaintiff in error contended that the damages beyond $417 for doctor bills, etc., were excessive, basing the contention on the decision in *Shawnee-Tecumseh Traction Co.* v. *Griggs*, 50 Okla. 566, 151 Pac. 230, to the effect that, if an injury is objective and if it is plainly apparent from the very nature of the injury that the injured person must undergo pain and suffering in the future, then the jury may infer pain and suffering. But where the injury is subjective and of such a character that laymen cannot with reasonable certainty know whether or not there will be future pain and suffering, then there must be offered evidence by expert witnesses learned in human anatomy who can testify from a personal examination or from knowledge of the history of the case, or from a hypothetical question based on the facts, that the victim with reasonable certainty may be expected to experience future pain and suffering. The plaintiff in error contended that the injury was subjective and since there was no expert testimony, the instruction to the jury to take into consideration the pain suffered was erroneous. But the supreme court of Oklahoma, in affirming the judgment of the lower court, held that the evidence was sufficient to establish an "objective injury" to the satisfaction of the jury, that expert testimony therefore concerning the injury and the pain was not necessary, and that the instruction given by the lower court was correct.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, St. Louis, Oct. 15-19. Dr. William P. Wherry, Medical Arts Bldg., Omaha, Sec.

American Association of Railway Surgeons, Chicago, October 31-November 2. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Sec'y.

American Child Health Association, Chicago, Oct. 15-19. Dr. Philip Van Ingen, 125 East 71st Street, New York, Secretary.

American College of Physical Therapy, Chicago, October 8-13. Dr. R. W. Fouts, Medical Arts Building, Omaha, Secretary.

American College of Surgeons, Boston, October 8-12. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Public Health Association, Chicago, Oct. 15-19. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

American Roentgen Ray Society, Kansas City, Mo., September 24-29. Dr. John T. Murphy, 421 Michigan Street, Toledo, Ohio, Secretary.

American Social Hygiene Association, Chicago, Oct. 15-19. Dr. W. F. Snow, 370 Seventh Avenue, New York, General Director.

Association of American Medical Colleges, Indianapolis, October 29-31. Dr. Fred C. Zapffe, 25 East Washington Street, Chicago, Secretary.

Association of Military Surgeons of the United States, Baltimore, October 4-6. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Sec'y.

Indiana State Medical Association, Gary, September 26-28. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.

Interstate Postgraduate Medical Association of North America, Atlanta, Ga., Oct. 15-19. Dr. W. B. Peck, 82 Stephenson Street, Freeport, Ill., Managing Director.

Medical Society of the Missouri Valley, Omaha, October 30-November 1. Dr. Earl C. Sage, Medical Arts Building, Omaha, Secretary.

Michigan State Medical Society, Detroit, September 26-28. Dr. F. C. Warnshuis, G. R. National Bank Building, Grand Rapids, Secretary.

New York and New England Association of Railway Surgeons, New York, October 12-13. Dr. Brooks W. McCuen, 423 James Street, Syracuse, New York, Secretary.

Ohio Valley Medical Association, Evansville, Ind., November 14-15. Dr. Bruce H. Beeler, 3rd and Main Streets, Evansville, Secretary.

Pennsylvania, Medical Society of the State of, Allentown, October 1-4. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Southern Medical Association, Asheville, N. C., November 12-15. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Vermont State Medical Society, Burlington, October 11-12. Dr. William G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Danville, Oct. 16-18. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Diseases of Children, Chicago

36: 195-424 (Aug.) 1928

*Cerebrospinal Fluid of Premature Infants: Intracranial Hemorrhage and Pigmentation. J. Glaser, Chicago.—p. 195.
Volume of Blood: II. Volume of Blood and Concentration of Crystalloids and Electrolytes in Dehydration and Edema. D. C. Darrow, St. Louis, and T. E. Buckman, Jacksonville, Fla.—p. 248.
*Factors in Decay of Teeth. L. O. Kappes, Rochester, Minn.—p. 268.
*Possible Causal Factor of Food Allergy in Certain Infants. B. Ratner, New York.—p. 277.
*Influence of Feeding on Certain Acids in Feces of Infants: II. Effect of Excess of Lactose in Breast Milk and in Modified Cow's Milk: Parenteral Infection. J. R. Gerstley and Others, Chicago.—p. 289.
Blood Fat in Diabetic Children. G. L. Boyd, Toronto.—p. 298.
*Rickets in Dogs as Probably Related to Sex. C. R. Stockard, New York.—p. 310.
Pyuria in Children: Use of Cystogram. C. F. McKhann, Boston.—p. 315.
*Hemorrhage of Suprarenals in New-Born Infant: Diagnosis and Therapy. M. A. Goldzieher and H. M. Greenwald, New York.—p. 324.
Pterygium Colli Congenitum (Congenital Webbing). M. De Bruin, Amsterdam, The Netherlands.—p. 333.
Acrodynia (So-Called): Pathology. J. W. Kernohan and R. L. J. Kennedy, Rochester, Minn.—p. 341.
Vincent's Infection of Nose: Case. H. I. Shulman, Boston.—p. 352.
Conditions Leading to Prescoliosis: Problem in Prophylaxis. A. Steindler, Iowa City.—p. 357.
Thomas Phaer, 1510-1560. J. Ruhräh, Baltimore.—p. 367.

Lumbar Puncture in Infants.—Glaser correlates the results of lumbar punctures with the observations in the clinic or at necropsy. He discusses the reasons for unsuccessful lumbar punctures. One hundred infants were studied and 129 lumbar punctures performed, 49 per cent of which were made during life and the remainder immediately after death. The smallest infant of the series in whom puncture was performed during life was one-half hour old and weighed 885 Gm. The explanation for the frequency of faulty lumbar punctures in premature infants is shown to be the detachment of the posterior wall of the dura mater spinalis by the entering needle and the pushing over of this posterior wall against the anterior wall, resulting in a dry tap. If the needle pierces both layers of the dura and enters the venous plexus on the posterior wall of the canal or the highly vascular body of a vertebra, a tap contaminated by traumatic blood may result. It is suggested that this may be the explanation of occasional unsuccessful punctures in older children and in adults. Based on anatomic and physical considerations, a technic was developed by which the percentage of faulty lumbar punctures in premature infants was reduced from 35 to 20. The principle of the technic consists in the employment of a small hypodermic needle (number 27) for performing the puncture and in having the infant held in a sitting position, so that the lumbar portion of the dural sac is distended by the pressure from above of the column of fluid within it. Ill results have not been seen from the employment of this technic on living premature infants, and the procedure has often been of great value in the diagnosis and treatment of cerebral hemorrhage. In a series of twenty-six cases of cerebral hemorrhage proved by necropsy, the cerebrospinal fluid obtained by lumbar puncture was grossly bloody or hazy in nineteen cases, or 73 per cent. In a series of forty-two cases in which evidence of cerebral hemorrhage was not found at necropsy, the spinal fluid was grossly bloody or hazy in thirteen, or 31 per cent, of the cases. The difficulty of distinguishing at lumbar puncture between fluids bloody as the result of trauma and fluids which contain blood as the result of intracranial hemorrhage is discussed. The opinion is expressed that it is not always possible to make such a differentiation. Seven cases of subtentorial intracranial hemorrhage in premature infants varying in age from 8 hours to 22 days in which the spinal fluid obtained by lumbar puncture was free from gross, and occasionally also from microscopic, blood are recorded. A brief history of yellow pigmentation of the cerebrospinal fluid is given and a method of measuring the degree of pigmentation, or xanthochromia, quantitatively by means of the icterus index is described. Every cerebrospinal fluid in this series obtained from a premature infant under the age of 60 days showed some degree of pigmentation varying from a pale, scarcely perceptible straw color to a deep brownish yellow. Evidence is given to show the autochthonous production of this pigment and bilirubin following hemorrhage into the cerebrospinal fluid, and that this has an important influence on the degree of xanthochromia of the cerebrospinal fluid. Evidence is presented which strongly suggests that cerebral hemorrhage may influence the degree, and is occasionally responsible for, the presence of some cases of icterus neonatorum. A comparison is made between cerebrospinal fluid obtained at the same time from the cerebral ventricles and the spinal canal. In seven cases in which clear fluid was obtained from both sources, the color and van den Bergh reactions of the two fluids were identical. Kern, or nuclear, icterus is briefly described, and the observations on the spinal fluid in two cases are reported.

Factors in Decay of Teeth.—According to Kappes' observations, the only feature that seems to be of definite etiologic significance in preventing decay of the teeth is a diet composed largely of fruits and vegetables. Heredity, infectious diseases and care of the teeth appear to be of little, if any, significance.

Cause of Allergy in Infants.—The placenta is permeable in human beings and in guinea-pigs. Proteins may pass from the maternal to the fetal circulation through the placenta in the human being and in the guinea-pig. The human fetus and the fetus of the guinea-pig can be actively sensitized in utero. Proteins can enter the circulation in an unchanged state from the maternal intestinal tract and thereby gain entrance to the fetal circulation. Therefore, says Ratner, under certain conditions an infant with a predisposition for allergy may become actively sensitized in utero because of the mother's overindulgence in certain protein foods during her antepartum period, and after birth, when coming in contact with this food for the first time, it will manifest some form of allergic phenomenon. These facts present a new explanation for the development of allergy in certain infants.

Study of Intestinal Fermentation.—The studies made by Gerstley et al. favor the Finkelstein hypothesis that intestinal fermentations are not primary but occur only after the development of some disturbance of nutrition.

Rickets and Sex.—Stockard suggests that there is an actual constitutional difference in calcium metabolism and bone formation between the male and female dog, in favor of the female. If this is the case, a similar difference between the sexes possibly exists among other mammals as well.

Suprarenal Hemorrhage in New-Born.—Goldzieher and Greenwald report two cases in which intra vitam diagnoses of hemorrhage of the suprarenals were made. Suprarenal hemorrhage in the new-born infant can be diagnosed from its symptoms, such as sudden onset of high temperature and rapid breathing, and occasionally by the presence of a palpable tumor in the abdomen, or by punctiform purpuric hemorrhages of the skin or mucous membranes. Exsanguination or intestinal obstruction may justify surgical intervention; otherwise, patients with the symptoms of acute cortical insufficiency should be treated by continued administration of the cortical hormone.

Annals of Internal Medicine, Ann Arbor, Mich.

2: 127-238 (Aug.) 1928

Individualization in Clinical Medicine. J. Bauer, Vienna.—p. 127.
Review of Research in Yellow Fever. A. Agramonte, Havana, Cuba.—p. 138.
*Metadysentery. A. Castellani, New Orleans.—p. 155.
Intestinal Amebiasis Due to Infection with Endameba Histolytica. W. M. James, Panama, R. P.—p. 171.
Treatment of Endamebiasis. P. W. Brown, Rochester, Minn.—p. 177.

Chronic Pancreatic Disorders, Diabetic and Nondiabetic. A. Bassler, New York.—p. 192.
Present Results and Outlook of Diabetic Treatment. F. M. Allen, Morristown, N. J.—p. 203.
*Occurrence of Anemia in Myxedema. C. T. Stone, Galveston, Texas. —p. 215.

Metadysentery.—Castellani calls attention to a chronic type of colitis characterized by recurrent attacks of diarrhea, generally simple diarrhea, but occasionally dysenteric for brief periods of time. Between the attacks the symptoms are somewhat indefinite and obscure. The patient feels tired, disinclined for work and nervous, and often complains of slight abdominal discomfort and flatulence. The symptoms are so indefinite that very different diagnoses are made, such as intestinal intoxication, intestinal subinfection, mucous colitis and abdominal neurasthenia; not rarely atypical appendicitis is suspected and an operation is performed. The metadysentery bacilli are intestinal bacilli similar to the dysentery bacilli, Shiga and Flexner, with regard to certain characters; viz., they do not produce gas in any sugar. They differ, however, from them as they clot milk and produce acidity in lactose, clot milk without producing distinct acidity in lactose, or produce acidity in lactose without clotting milk. Some species of the so-called metadysentery bacilli group (Lankoides-Dysenteroides group) are pathogenic; others probably are not. The two principal species which Castellani found in 1905 and published in 1907 and 1908, viz., *B. ceyloncusis* B and *B. ceyloncusis* A, are, in all probability, pathogenic, and so is the *Bacillus metadysentericus* described by him. In the chronic conditions discussed, the blood of the patient generally contains a large amount of agglutinins for the variety of metadysentery bacillus isolated from the patient's stools, as well as the same variety isolated from other patients with the same symptoms. In one recent case three varieties of Lankoides were isolated from the stools—two (*B. ceylonensis* B and *B ceyloncusis* A) were agglutinated equally well by the patient's blood, and the agglutinins were specific; the third variety, a strain of *B. madampensis*, was not agglutinated, and was probably nonpathogenic. This case was probably one of mixed infection caused by a strain of *B. ceyloncusis* B + *B. ceyloncusis* A of the metadysentery group.

Anemia in Myxedema.—Among twenty-three cases of myxedema seen by Stone, a secondary anemia occurred in thirteen. The anemia is due to the lowered content of thyroxin in the body acting on the blood forming organs. The administration of thyroid substances usually causes the anemia to disappear, while other treatment fails until the specific deficiency is corrected.

Archives of Dermatology and Syphilology, Chicago

18: 179-338 (Aug.) 1928

Chronic Atrophic Lichenoid Dermatitis (Csillag): So-Called Lichen Albus of Zumbusch. F. Wise, New York, and B. Shelmire, Dallas, Texas.—p. 179.
Tattoo and Syphilis. G. H. Belote, Ann Arbor, Mich.—p. 200.
*Local Accidents Following Intramuscular Administration of Salts of Heavy Metals: Two Cases of Embolia Cutis Medicamentosa. J. A. Gammel, Cleveland.—p. 210.
Lesions of Mucous Membranes in Epidermolysis Bullosa: Case. N. Tobias, St. Louis.—p. 224.
Multiple Tumors of Skin Resembling Mycosis Fungoides. F. R. Schmidt, Chicago.—p. 231.
Sarcoids and Related Lesions: Seventeen Cases. W. H. Goeckerman, Rochester, Minn.—p. 237.
Standardization of Trypanocidal Test and of Trypanocidal Value of Arsphenamine Based on More Than 100 Tests. G. W. Raiziss and M. Severac, Philadelphia.—p. 263.
*Mycotic Inguinal Lymphadenitis Associated with Superficial Fungus Dermatitis of Feet: II. Mycotic Dermatitis. C. White, Chicago.—p. 271.
Human Sweat as Culture Medium for Bacteria. B. Usher, Montreal. —p. 276.
Scleroderma-Like Epithelioma. D. W. Montgomery and G. D. Culver, San Francisco.—p. 281.
Xeroderma Pigmentosum: Improvement in One Member of Affected Family. E. F. Corson and F. C. Knowles, Philadelphia.—p. 284.
Radium Therapy of Tumors of Skin at Curie Institute of University of Paris. G. T. Pack, Birmingham, Ala.—p. 286.
*Treatment for Varicose Ulcers. E. E. Marcovici, New York.—p. 290.
Benign Cystic Epithelioma: Case. F. J. Eichenlaub, Washington, D. C. —p. 291.
Appendage of Anal Region in Mexican Woman. G. P. Lingenfelter, Denver.—p. 293.

Local Accidents Following Intramuscular Injection of Heavy Metals.—Sections taken five days after the injection of potassium bismuth tartrate showed the crystals and granules within the vessels, and a marked infiltration of the tissues with polymorphonuclear leukocytes, lymphocytes, endothelial cells and edema. The sections taken twelve days after the injection showed considerably fewer crystals in the vessels and no granules. Gammel says that this is the first time in the United States that crystals were demonstrated within arterial blood vessels following the administration of heavy metals salts as used in the treatment of patients with syphilis.

Mycotic Inguinal Lymphadenitis.—A case is reported by White of a positive fungus culture of *Trichophyton interdigitale* obtained from an inguinal lymph node associated with and undoubtedly infected secondarily from a superficial fungus eruption of the feet; the same organism was recovered from the primary focus. Such observations of the lymph node have not previously been reported from superficial dermatomycoses.

Human Sweat as Culture Medium for Bacteria.—Usher has found that human sweat is an excellent culture medium for certain bacteria, including various higher fungi. Comparative studies reveal that it compares favorably, as such, with various laboratory mediums. The activity of bacterial growth in sweat appears to vary directly with the sugar content.

Treatment for Varicose Ulcers.—Marcovici used an ointment of 1 per cent neoarsphenamine with the most gratifying results. A layer of this ointment was applied only once, at night, over the surface of the wound. The treatment proved painful, so an anesthetic was added as follows: neoarsphenamine, 0.3 Gm.; ethylaminobenzoate, 2 Gm.; white petrolatum, 30 Gm. After one application, a 10 per cent bismuth subgallate ointment was applied for the next few days. The ulcer has not recurred in any case. The site of the ulcer is covered with a pigmented scar area.

Canadian Medical Association Journal, Montreal

19: 145-282 (Aug.) 1928

Carcinoma and Ulcer of Stomach. E. M. Eberts, Montreal.—p. 145.
Treatment of Pernicious Anemia. D. Graham, Toronto.—p. 150.
*Effect of Sunlight on Susceptibility of Rachitic Rats to Infection. E. C. Robertson, Toronto.—p. 154.
Chronic Carbon Monoxide Poisoning. J. C. S. Battley, London.—p. 157.
Dermatitis Venenata. W. R. Jaffrey, Hamilton, Ont.—p. 163.
*Blueberry Leaf Extract in Diabetes Mellitus. E. M. Watson, London, Ont.—p. 166.
Asthma. D. Nicholson, Winnipeg, Man.—p. 171.
Brucella Abortus Infection in Man: Two Cases. I. Scozzafave and W. P. Warner, Welland, Ont.—p. 177.
*Auricular Flutter Restored to Normal Rhythm by Quinidine: Case. C. R. Bourne, Montreal.—p. 180.
Injection of Air by Lumbar Route in Diagnosis and Treatment. J. N. Petersen, Montreal.—p. 184.
Carcinoma in Blue Domed Cyst of Breast. L. J. Adams, Montreal.—p. 190.
Paths from Periphery. W. D. M. Lloyd, London, Ont.—p. 192.
Thrombo-Angiitis Obliterans: Plea for Conservative Surgery. G. Miller and M. Kaufmann, Montreal.—p. 198.
Ethylene Anesthesia. E. Ross, Winnipeg.—p. 202.
Double Fracture of Mandible Predisposed by Impacted Third Molar. W. A. Crich, Toronto.—p. 207.
Hyperventilation Tetany. J. R. Monteith and A. T. Cameron, Winnipeg, Man.—p. 210.
Mumps: Fatal Case. G. G. Leckie, Lucky Lake, Sask.—p. 212.
*Lymphoid Leukemia and Tuberculosis. J. Feigenbaum, Montreal.—p. 213.
Bridge of Life. C. C. Ferguson, Winnipeg, Man.—p. 225.
Maternal Mortality from Puerperal Sepsis. J. Young, Edinburgh.—p. 227.

Sunlight; Rickets; Infection.—Robertson reports on the results obtained by her in a study of the effect of sunshine on rachitic rats, as measured by their susceptibility to infection. Exposure to the sun about noon for two hours daily during a period of four weeks markedly raises the resistance of young rachitic rats to infection. Of 263 sun-exposed rats, 57 per cent survived; of 241 rats kept inside, 32 per cent survived. Normal rats, after such sun treatment, did not survive as well as similar rats kept inside. Exposure to the outside air with protection from the sun had no beneficial effect on rachitic rats. After these rachitic rats had been given treatments extending over four weeks' time, in which they were exposed at a distance of 30 inches from a quartz mercury vapor lamp for fifteen minutes daily, they showed a higher degree of resistance than corresponding rats kept inside, but not as high as such rats put out in the sun. Fifteen minutes is probably too long an exposure for these animals. Rachitic rats, fed small amounts of irradiated ergosterol, are less susceptible to artificial infection than rats that have not been given any antirachitic treatment.

Blueberry Leaf Extract in Diabetes.—A limited experience with the use of blueberry leaf extract in the treatment of diabetes mellitus has convinced Watson that it appears to exert a beneficial effect in certain cases of diabetes. Its action is not consistent. Its utility is most apparent in middle-aged or elderly patients, and in mild cases of the disease. Owing to its relatively slow and feeble action, the drug is of no avail in the emergencies or complications attendant on diabetes. Blueberry leaf extracts cannot be regarded as a substitute for insulin, generally, but it may become an adjunct in the treatment of diabetes. Blueberry leaf extract is without evident deleterious effects. It does not give rise to serious hypoglycemia. Withdrawal of the drug may be accompanied by a partial relapse in carbohydrate tolerance after a variable length of time.

Quinidine in Auricular Flutter.—In a young subject under 40, with established flutter and a heart definitely enlarged, but without gross cardiac failure, there was a marked tolerance to quinidine, and massave dosage (750 grains) restored the normal mechanism of the heart beat. Bourne found that digitalis improved the ventricular action, but apparently deserved little, if any, credit for the offset of flutter. Combined digitalis and quinidine therapy was poorly borne.

Lymphoid Leukemia and Tuberculosis.—Feigenbaum reports a case in which lymphoid leukemia coexisted with tuberculosis. The patient was 56 years of age, and died in coma, apparently of the leukemia. The occurrence of tuberculosis in lymphatic leukemia is explained by regarding the tuberculous process as an expression of lowered resistance in the patient.

Johns Hopkins Hospital Bulletin, Baltimore

43: 61-116 (Aug.) 1928

Hereditary Factor in Some Diseases of Hemopoietic System. H. Rolleston. —p. 61.
Electrograms Taken from Isolated Strips of Mammalian Ventricular Cardiac Muscle. H. B. Taussig, Baltimore.—p. 81.
Range of Hydrogen-Ion Concentration of Certain Buffer Solutions in Which Chicken-Tumor Virus Retains Its Activity. M. R. Lewis and L. Michaelis, Baltimore.—p. 92.
*Main Characteristics of Carcinoma Cells in Vitro. A. Fischer, Berlin-Dahlem.—p. 105.

Characteristics of Carcinoma Cells in Vitro.—Fischer has studied mammalian carcinoma cells cultivated indefinitely in vitro. The medium employed consists of one volume of chick embryonic tissue juice and one volume of a plasma mixture composed of 25 per cent of chicken plasma and 75 per cent of rat plasma. Pieces of mouse tissue, either fresh or stored for a long time in the icebox, are brought in contact with the carcinomatous tissue. After from two to four passages the normal tissue is found to be infiltrated throughout with carcinoma cells. If the normal tissue is added in a living condition, an outgrowth of normal cells can naturally be seen, but after some passages this disappears entirely, leaving only carcinoma cells. The strain of carcinoma cells is now 1 year old and has maintained its full malignancy over the whole time. Fischer found that carcinoma cells are more sensitive to an increased hydrogen ion concentration and also to high and low tensions of oxygen than are normal tissue cells. The growth of carcinoma cells ceases at a low oxygen tension, whereas, under similar conditions, normal tissue cells continue to proliferate.

Journal of Clinical Investigation, Baltimore

6: 1-169 (Aug. 20) 1928

*Serum Electrolytes: III. In Infections, Nephritis and Other Pathologic Conditions. F. W. Sunderman, J. H. Austin and J. G. Camack, Philadelphia.—p. 37.
*Relation Between Cardiac Size and Cardiac Output Per Minute Following Administration of Digitalis: In Normal Dogs. A. E. Cohn and H. J. Stewart, New York.—p. 53.
*Id.: In Dogs in Which Heart is Enlarged. A. E. Cohn and H. J. Stewart, New York.—p. 79.
Velocity of Blood Flow: XI. Pulmonary Circulation Time, Minute Volume Blood Flow Through Lungs, and Quantity of Blood in Lungs. H. L. Blumgart and S. Weiss, Boston.—p. 103.
*Excretion of Calcium in Two Cases of Nephrosis Treated with Parathyroid Extract. W. de M. Scriver, Montreal.—p. 115.
Chemical Changes Occurring in Body as Result of Certain Diseases in Infants and Children: II. Acute Hemorrhagic Nephritis: Subacute Nephritis: Severe Chronic Nephritis. A. F. Hartmann and D. C. Darrow, St. Louis.—p. 127.
*Reduction of Hypercalcemia in Cases of Polycythemia Vera by Phenylhydrazine. G. E. Brown and G. M. Roth, Rochester, Minn.—p. 159.

Serum Electrolytes in Tuberculosis and Nephritis.—Sunderman et al. noted that in tuberculosis, pleural effusion, chronic glomerulonephritis and mercurial poisoning there was decrease in both the base and the chloride of the blood serum, with the decrease in chloride tending to be relatively greater. The magnitude of the depression of chloride in the case of mercurial poisoning far exceeded that in the other cases. In acute nephritis, eclampsia and rheumatic fever, there was a decrease in chloride without significant change in base. Reduction in bicarbonate occurred in certain individuals but was not clearly characteristic of any of these groups. Reduction in refractive index was observed in those with chronic glomerulonephritis. A tendency to abnormal variations, sometimes high, sometimes low in refractive index was observed in the other pathologic cases. Elevation of the temperature was generally associated with a lowered carbon dioxide content. This was greater than could be accounted for by the change in base bound by protein with change in temperature and must be attributed either to acidosis or to hyperpnea.

Relation Between Cardiac Size and Output Following Administration of Digitalis.—Following the administration of digitalis to normal dogs in so-called therapeutic amounts, the following effects were observed by Cohn and Stewart: (1) the form of the T wave in the electrocardiogram changed; (2) the cardiac output decreased; (3) the size of the heart decreased; (4) the height of the ventricular excursions increased. When digitalis was excreted all these measurements returned toward normal.

Id.—Cohn and Stewart studied the effect of digitalis on the cardiac output, cardiac size and ventricular contraction of dogs with enlarged hearts, but without signs of heart failure. They have found in them, as in normal dogs, that: (1) the size of the heart is decreased; (2) the extent of ventricular contractions is increased, and (3) the cardiac output which results is the net result of the effect of digitalis on the two underlying actions. At first the effect on cardiac size predominates, so that the cardiac output diminished. Later the effect on ventricular contraction may predominate, so that cardiac output reaches its original normal volume, or even overshoots it, at a time when the size of the heart is still relatively small.

Excretion of Calcium in Nephrosis.—In two cases of chronic nephrosis reported on by Scriver, the excretion of calcium in the urine was found to be extremely small. The administration of parathyroid extract had practically no effect on the calcium of the urine but caused a marked increase in that of the feces. The period of increased excretion corresponded with increase of an already low calcium in the serum. It required relatively large doses of parathyroid extract to increase the serum calcium values; in one case these were still below normal in spite of large doses of a proved potent extract.

Reduction of Hypercalcemia by Phenylhydrazine.—Fourteen subjects examined by Brown and Roth presenting the classic picture of polycythemia vera showed an increase in the serum calcium above the accepted range of normal. The values in this substance ranged from 11.1 to 18.1 mg. for each hundred cubic centimeters of serum. The average value was 14.3 mg. Following treatment with phenylhydrazine and destruction of corpuscles to approximately normal or even subnormal values, the percentage concentration of serum calcium decreased to levels slightly above normal. The authors suggest that the susceptibility of patients with polycythemia vera to thrombosis and to high grades of calcification in the peripheral vessels in some cases of polycythemia vera may be a late result of hypercalcemia.

Journal of Nervous & Mental Disease, New York

68: 113-224 (Aug.) 1928

*Treatment of Neurosyphilis by "Inoculation Malaria" in United States Veterans' Bureau. P. B. Matz, Washington, D. C.—p. 113.
Myasthenia Gravis with Visceral Symptoms; Contrast with Case of Dystonia Musculorum Deformans. A. N. Foxe.—p. 134.
Macrophalia Resp. Macromelia Paraesthetica. J. Ratner, Leningrad, Russia.—p. 142.
*Acetic Anhydride Sulphuric Acid Test for General Paralysis. A. Myerson and R. D. Halloran, Boston.—p. 155.

Treatment of Neurosyphilis by Malaria.—Matz reports that in the United States Veterans' Bureau the method of

treatment in vogue in a series of 346 patients was the intravenous injection of about 2.3 cc. of malarial blood. The patients were carefully selected and none were chosen for the treatment who had certain well defined contraindications, such as cardiovascular disease, nephritis or active pulmonary tuberculosis. Of 346 patients treated, 23.99 per cent were greatly improved; 41.04 per cent were improved; 22.83 per cent remained unimproved; 7.51 per cent became deteriorated, and 3.47 per cent died. Following this treatment the cytology of the spinal fluid was benefited in 81.72 per cent of a series of 279 cases under observation; the blood Wassermann reaction became negative or was modified in 72.04 per cent; the globulin became negative or was reduced in 69.89 per cent; the spinal fluid Wassermann reaction became negative or was modified in 59.85 per cent, and the colloidal gold curve was modified in 54.48 per cent of the cases.

Chemical Test for Paresis.—Myerson and Halloran conclude that (1) the Boltz test is not a specific test for paresis; (2) only products high in aldehyde should be used; (3) it is positive in the presence of protein, and the color is a rough index of relative quantities; (4) it does not have any advantage over any existing test and is less exact, and (5) in a series of cases in which the blood serum was studied, it did not have any specific value.

Journal of Urology, Baltimore

20: 147-265 (Aug.) 1928

Surgical Pathology of Malformations in Kidneys and Ureters. J. E. Davis, Detroit.—p. 155.
Apparent Disappearance of Pulmonary Metastasis in Case of Hypernephroma Following Nephrectomy. H. C. Bumpus, Jr., Rochester, Minn.—p. 185.
Traumatic Rupture of Left Kidney: Case. A. Harris, New York.—p. 193.
*Suprarenal-Renal Heterotopia. H. D. Caylor, Rochester, Minn.—p. 197.
Papillary Carcinoma of Kidney with Cystic Formation, Containing Over Eight Liters of Fluid. G. F. Cahill and H. H. Gile, New York.—p. 203.
Muciparous Glands in Mucosa of Urinary Bladder: Two Cases. L. Edelman, New York.—p. 211.
Sedimentation Test in Urology. H. L. Wehrbein, New York.—p. 225.
Periostitis and Ostitis of Symphysis and Rami of Pubis Following Suprapubic Cystotomies. E. Beer, New York.—p. 233.
*Value of Vas Injection in Chronic Genital Infections. T. Baker, Pittsburgh.—p. 237.
*Comparison of Results of Various Treatments for Acute Gonorrheal Epididymitis. E. Stone, Providence, R. I.—p. 245.
Exostoses Occurring on Os Calcis as Result of Gonococcal Infection. H. K. Wade, Hot Springs, Ark.—p. 259.

Suprarenal-Renal Heterotopia.—Another case of suprarenal-renal heterotopia is added by Caylor to the thirteen reported. The anomaly is frequently bilateral and during nephrectomy it is almost inevitable that the suprarenal gland will be removed and that acute epinephrine deficiency will result. Frequently the disorder is associated with status thymicolymphaticus with the accompanying susceptibility to surgical shock and infection.

Vas Injections in Infections of Seminal Vesicles.—Baker asserts that medication of the seminal vesicles by vas injection is efficient in effecting a cure in perhaps 40 per cent of cases of chronic genital infection. Baker injects from 10 to 20 cc. of a freshly prepared 5 to 10 per cent solution of collargol. An equal number of patients will require prostatic massage, sounds and irrigations because of conditions other than seminal vesiculitis, while in not a few cases the injection cannot be accomplished because of inflammatory occlusion of the vasa. However, the successful injection of the vesicles no doubt shortens the course of treatment required for a cure. The procedure should be reserved for those cases which have obstinately resisted for several months other well known and well tried methods of treatment; but the surgeon should not be too optimistic in assuring the patient that a cure can be obtained by vas injection alone. The danger of sterility following the procedure, because of traumatic occlusion of the vasa, can be greatly obviated if the medication is injected directly into the lumen of the vas (vas puncture) rather than by a preliminary vas incision (vasotomy).

Treatment of Acute Gonorrheal Epididymitis.—Stone's experience has been that expectant treatment alone is inefficient. Epididymotomy gives immediate relief of pain in a large minority of the cases and an earlier relief than any other form of treatment in a large majority of the cases. It shortens the time of incapacity by half as compared with expectant treatment; shortens the time of involution in over 80 per cent of the cases more effectively than any type of treatment, except possibly with a milk preparation, and has a lower percentage of recurrences than any form of care save mercurochrome, and here the difference is but .2 per cent. Sodium iodide gives no better results in any respect than expectant treatment alone may be expected to give. In carefully selected cases diathermy may obviate any incapacitation, although it does not have much effect on pain, and shows the poorest results in regard to involution. Acute gonorrheal epididymitis occurred in forty-three, or 4.8 per cent, of 900 consecutive cases of acute or chronic gonorrhea seen by Stone.

Kansas Medical Society Journal, Topeka

29: 247-282 (Aug.) 1928

State Medicine. C. H. Lerrigo, Topeka.—p. 247.
Uses and Abuses of Free Medical Service. E. A. Reeves, Kansas City.—p. 251.
Complications Produced by Bismuth in Treatment of Syphilis. C. C. Dennie, Kansas City.—p. 255.
Problem of Occipitoposterior. E. A. Reeves, Kansas City.—p. 259.
Laboratory Examination in Early Syphilis. J. D. Kabler, Wichita.—p. 264.

Kentucky Medical Journal, Bowling Green

26: 383-434 (Aug.) 1928

Present and Future of Ophthalmology and Otolaryngology. J. A. Stucky, Lexington.—p. 386.
Otitic Sepsis: Cases. S. B. Marks, Lexington.—p. 389.
Diagnostics Incident to Refraction. J. D. Williams, Ashland.—p. 395.
Pituitary Tumor with Eye Symptoms. M. C. Baker, Louisville.—p. 399.
Mastoiditis in Infants. A. M. Alden, St. Louis.—p. 403.
Relation of Eye Diseases to Diseases of Nasal Accessory Sinuses. M. L. Gunn, Harlan.—p. 406.
Interpretation of Alterations in Visual Field. M. J. Stern, Paris.—p. 408.
Diagnosis and Treatment of Maxillary Sinusitis. R. H. Cowley, Berea.—p. 416.
Leukopenia Extremis in Acute Staphylococcus and Streptococcus Hemolyticus Infection of Tonsils: Case. J. H. Simpson, Louisville.—p. 423.
Gangrenous Dermoid Cyst of Ovary. J. W. Price, Louisville.—p. 426.
Postoperative Anorectal Ulceration. G. S. Hanes, Louisville.—p. 427.

Michigan State M. Society Journal, Grand Rapids

27: 503-554 (Aug.) 1928

Laboratory Diagnosis of Tuberculosis. M. Pinner, Detroit.—p. 503.
Duties of Aurist at Detroit Day School for Deaf. E. Amberg, Detroit.—p. 507.
Hydronephrosis. L. B. Cowen, Detroit.—p. 509.
Different Angle on Disposing of Tuberculous Patients. E. S. Bullock, Detroit.—p. 512.
History of Cardiology. J. L. Chester, Detroit.—p. 519.
*Order of Birth as Factor in Epilepsy. W. Green, Wahyamega.—p. 525.

Order of Birth as Factor in Epilepsy.—A study was made by Green of 1,000 cases of epilepsy in families of two or more children. Twenty-four per cent were found to be first born. As an illustration: In the ninety-six families of two children each, sixty-one were first born and thirty-five were second born. In the fifty-one families of ten children each, five were first born; four were second born; twelve were third born; three were fourth born, and six were fifth born. There was not any sixth born; nine were seventh born; one was eighth born; five were ninth born, and six were tenth born. Of one family of eighteen children the epileptic child was second in order of birth. Disagreeing with certain writers who assert that defective children are more apt to occur in large families than in small families, the tables compiled by Green of 1,000 epileptic admissions and the table compiled of 1,000 feebleminded admissions show a decided decline in the average number of afflicted children among children coming from the larger families.

New England J. Medicine, Boston

199: 255-304 (Aug. 9) 1928

Crisis of Exophthalmic Goiter. F. H. Lahey, Boston.—p. 255.
Radium and Its Use in Gynecology. J. V. Meigs, Boston.—p. 258.
Spinal Fluid in Meningitis. F. Fremont-Smith, Boston.—p. 264.
*Case of Congelation Dermatitis with Complete Destruction of Tissues. T. W. Thorndike, Boston.—p. 265.
*Deaths from Alypin Poisoning. A. Riley, Boston.—p. 267.
*Case of Spinal Cord Bladder. O. D. Phelps, Worcester, Mass.—p. 267.
Primary Epidermoid Carcinoma of Male Urethra. C. N. Peters, Portland, Me.—p. 269.
Case in Which Intestinal Pathology Apparently Caused Symptoms in Upper Urinary Tract. E. Stone, Providence, R. I.—p. 270.

*Sarcoma of Kidney: Cured. C. L. Deming, New Haven, Conn.—p. 273.
Case of Pyonephrosis in Infancy. C. G. Mixter, Boston.—p. 275.
Solitary Cyst of Kidney. A. H. Crosbie, Boston.—p. 277.
Early Diagnosis of Malignant Disease of Urinary Tract. J. D. Barney, Boston.—p. 281.

Congelation Dermatitis Due to Icebag.—The cause of the congelation in Thorndike's case was the icebag. The patient had a chronic interstitial nephritis. Following her last delivery, the woman was threatened, on both extremities, with a phlegmasia alba dolens. In order to relieve the pain, icebags were applied to the most tender areas. These areas were on the posterior aspect of the thighs, just above the popliteal space. Previous to admission, icebags had been in use constantly for a period of three weeks. The icebags were covered with a flannel, and salt was not used with the ice. When Thorndike first examined the patient there was no sign of edema or local infection. On each thigh over the area where the icebags had been applied there was a lesion in the form of a large, sharply circumscribed, solitary bulla, arising abruptly from the normal skin and about the size of a large grapefruit. Each lesion covered a surface about the area of the palm of a hand. The blisters were filled with a serous exudate, which had not changed its character up to the time of rupture. There was no sign of an areola about the bullae, but instead there was a well defined line, about one-fourth inch wide, of alabaster whiteness. When Thorndike ruptured the lesions, the surface beneath was found to be necrotic. The ulceration from this time rapidly increased until finally all the dermal tissues sloughed away to the depth of the subcutaneous structures, leaving ulcers with indurated, sharply cut and not undermined edges, separated from the healthy integument by the white line mentioned. This girdle was the line of demarcation between the frozen and the healthy skin. The process of repair was so slow that a Thiersch skin graft was resorted to, and an uneventful recovery followed.

Deaths from Alypin Poisoning.—In the three cases reported by Riley, urethral sounds had been passed before the alypin solution was injected into the urethra. In each case about 1 drachm (4 cc.) of the solution was used. The symptoms, convulsions, came on shortly after the urethral injection was made. The use of alypin in a normal or nontraumatized urethra is apparently harmless, but in a traumatized urethra it is a very dangerous drug.

Spinal Cord Bladder.—Phelps' patient, aged 25, dated her trouble from an attack of whooping cough at the age of 6, and the condition was aggravated by a fall on her spine that she sustained about five years ago while swimming in an inside pool. The girl was not emptying her bladder and the incontinence was due to overflow. Cystoscopy revealed a trabeculated bladder covered with incrustations, and flakes of pus were floating about in the media. Kidney function was within normal limits and pyelograms were not remarkable. The diagnosis of spina bifida occulta was made by the plates.

Cured Sarcoma of Kidney.—Six and one-half years ago, Deming removed a congenital spindle cell sarcoma of the kidney from a man, aged 29. The patient is well today without signs of recurrence.

New York State J. Medicine, New York

28: 963-1026 (Aug. 15) 1928

Practicing Physician in Court. L. H. Moss, Richmond Hill.—p. 963.
Physical Measures in General Practice: II. Ultraviolet Radiations and Mechanical Measures. R. Kovacs, New York.—p. 972.
Some of More Common Skin Diseases. A. M. Crance, Geneva.—p. 980.
Case of Cerebellar Tumor, Cerebellar Abscess and Otitis Media: Three Cases of Brain Disease with Similar Symptoms but Diverse Pathology. D. L. Poe, New York.—p. 985.
Public Speaking Course by Queens County Medical Society. L. M. Rohr, Jamaica.—p. 991.
Treatment of Hypertension. M. A. Rabinowitz, New York.—p. 993.

Oklahoma State M. Association Journal, Muskogee

21: 209-240 (Aug.) 1928

Toxemias of Pregnancy. J. G. Smith, Bartlesville.—p. 209.
Recurrent Abortion. M. B. Glismann, Okmulgee.—p. 212.
Obstetric Anesthesia and Analgesia. M. E. Sippel, Tulsa.—p. 215.
Some Hemorrhages of Pregnancy. E. W. Foster, Tulsa.—p. 218.
Preventive Obstetrics and Pediatrics. R. A. Bolt, Berkeley, Calif.—p. 224.
Future of Obstetrics in Oklahoma. L. S. Blachly, Oklahoma City.—p. 227.

Physical Therapeutics, Baltimore

46: 373-422 (Aug.) 1928

Diathermy in Multiple Sclerosis. J. Stephenson, New York.—p. 373.
Therapeutics and Dosage of Roentgen Ray. W. B. Snow, New York.—p. 377.
Intestinal Canal as Source of Focal Infection. A. Bassler, New York.—p. 384.
Systemic Effects of Renal Infections. H. D. Furniss, New York.—p. 387.
Rôle of Roentgen Ray in Focal Infection. L. T. LeWald, New York.—p. 389.

Public Health Reports, Washington, D. C.

43: 2095-2155 (Aug. 10) 1928

Regulating Production, Handling and Distribution of Milk. H. Walker, Minneapolis.—p. 2095.

Tennessee State M. Association Journal, Nashville

21: 123-166 (Aug.) 1928

*Unique Case of Uterine Pregnancy. C. N. Cowden, Nashville.—p. 123.
Acute Mechanical Intestinal Obstruction. R. A. Barr, Nashville.—p. 128.
Chronic Dacryocystitis Caused by Chronic Ethmoid Disease. W. L. Simpson, Memphis.—p. 133.
Diagnosis and Treatment of Hay-Fever and Asthma. J. P. Henry, Memphis.—p. 134.
Ureteral Stricture and General Practitioner. C. R. Thomas, Chattanooga.—p. 139.

Unique Case of Uterine Pregnancy.—Cowden relates the case of a woman from whom he removed the right tube and ovary in 1919. In 1926 he removed the left tube and ovary without discovering the existence of pregnancy. Later a cesarean section delivery was done. As the left tube was filled with pus, and its fimbriated extremity closed, Cowden says the only possible way that the ovum could reach the uterine cavity was for it to migrate from the left to the right side and enter through the small stump of the right tube, which was about 1 cm. long and found to be patulous at the operation.

Texas State J. Medicine, Fort Worth

24: 251-326 (Aug.) 1928

Use of Preserved Fascia in Hernia Repair. A. R. Koontz, Baltimore.—p. 259.
Improved Methods in Treatment of Some Common Fractures. T. C. Gilbert, Dallas.—p. 266.
Diagnosis and Surgical Treatment of Diseases of Gallbladder. J. S. McCelvey, Temple.—p. 269.
Use of Welland Howard Stone Dislodger for Removal of Ureteral Calculi. C. M. Simpson, Temple.—p. 273.
Chronic Type of Appendicitis. R. W. Knox, Houston.—p. 275.
Contraindications to Radiation Therapy in Gynecology. C. W. Flynn, Dallas.—p. 279.
Radiation Therapy in Benign Uterine Hemorrhage. C. L. Martin, Dallas.—p. 280.
Conduct of Labor in Home. W. E. Massey, Dallas.—p. 285.
*Alcohol Injection of Internal Laryngeal Nerve in Painful Tuberculous Laryngitis. C. J. Koerth, R. G. McCorkle and H. P. Hill, San Antonio.—p. 289.
Achylia Gastrica: Use of Histamine. E. V. DePew, San Antonio.—p. 294.
Rabies as Public Health Problem. M. A. Wood, Houston.—p. 298.
Epidemiology of Poliomyelitis. W. A. Davis, Austin.—p. 300.

Alcohol Injections in Tuberculous Laryngitis.—In thirteen cases of painful tuberculous laryngitis, twenty alcohol injections were made by Koerth et al., this number including the reinjection of alcohol in two cases. Complete relief of pain on swallowing was obtained in nine cases; partial relief in two, and no relief in two. The probable cause of obtaining only partial relief in two cases is that in one there was ulceration of the left tonsil and the left side of the posterior pharyngeal wall, while in the other there was ulceration of the anterior and posterior tonsillar pillars, the tonsillar fossae, the uvula, the soft palate and the posterior pharyngeal wall, which are not supplied by the internal laryngeal nerve. Failure to inject the internal laryngeal nerve in two cases resulted in failure to relieve pain. In the eleven cases the left internal laryngeal nerve was injected in one, the right internal laryngeal nerve in three, and both nerves in seven. In the seven cases in which both nerves were injected, the procedure was carried out at one operation, with no ill effects noticed. Prior to the injection of the nerve in eleven cases, the pain had been referred from the painful spot to the back of the ear in five, while in the other cases pain was complained of at the time of the injection. In all cases after the alcohol had been injected, the patients complained of local pain lasting from thirty-six to seventy-two

hours. After the injection of alcohol into the internal laryngeal nerve, there was difficulty in swallowing in five cases; however, this difficulty was not due to pain but to motor disturbance, lasting for a period of from two to five days. In one case there was paralysis of the lips on the left side and left half of the tongue, which passed away in five days. Nine patients who had pain on swallowing food were relieved after the injection of alcohol for a period of from eight to fifty-eight days, and one patient had relief of pain for 292 days.

Virginia Medical Monthly, Richmond

55: 295-366 (Aug.) 1928

Early Definite Treatment of Strabismus. O. Wilkinson, Washington, D. C.—p. 295.
Heart Disease: Public Health Problem. F. C. Rinker, Norfolk.—p. 298.
Congenital Idiopathic Dilatation of Colon: Medical and Surgical Aspects: Case. J. A. Reed and D. L. Borden, Washington, D. C.—p. 300.
Coronary Occlusion: Case. B. P. Seward, Roanoke.—p. 302.
*Brachial Plexus Block. E. M. Hanrahan, Jr., Baltimore.—p. 305.
Examination of Baby and Small Child. C. P. Obenschain, New Hope. —p. 306.
*Dystocia Following Use of Radium in Uterus. H. F. Kane, Washington, D. C.—p. 308.
*Caudal Anesthesia in Cystoscopy. H. N. Dorman, Washington, D. C. —p. 310.
Value of Vital Capacity Estimations in Study of Heart Disease. A. B. Hodges, Norfolk.—p. 315.
Country Doctor. E. L. Caudill, Elizabethton, Tenn.—p. 318.
Prognosis and Treatment of Tetanus: Three Cases. R. W. Upchurch, Durham, N. C.—p. 319.
Toxic Adenoma of Thyroid with Heart Failure and Edema: Case. W. C. Caudill, Pearisburg.—p. 323.
Etiology of Scarlet Fever and Value of Dick Test Compared to Pharyngeal Cultures. J. S. Weitzel, Richmond.—p. 324.
Use and Abuse of Laboratory. J. L. Thompson, Washington, D. C.—p. 328.
Increasing Value to Physician of Blood Chemistry. J. W. Lindsay, E. C. Rice and M. A. Selinger, Washington, D. C.—p. 330.
Present-Day Conception of Colonic Hyperexcitability. W. R. Graham, Richmond.—p. 333.
Use of Lipiodol in Diagnosis of Sinus Disease. G. B. Trible, Washington, D. C.—p. 337.
Safe, Efficient Ether Anesthesia. J. B. H. Waring, Blanchester, Ohio. —p. 340.

Brachial Plexus Block.—Hanrahan has used Labat's method in forty-seven cases. Of this number, there were thirty-six closed reductions of fractures and dislocations. In thirty-one, perfect anesthesia resulted. Muscular relaxation was as complete as under a deep general anesthesia. One anesthesia in a 7 year old child was unsatisfactory, but another in an 8 year old child was good. In one very fat woman the landmarks were very obscure, and there was very little or no anesthesia. In one impacted Colles' fracture in an elderly woman, some pain was felt on breaking up the impaction, which, however, was eliminated by infiltrating procaine about the site of fracture. In two others, the anesthesia, while not perfect, was satisfactory. There were ten open reductions and amputations and one drainage of a palmar abscess. In nine patients there was perfect anesthesia, while in two it was satisfactory. This method of regional anesthesia is apparently ideal for all operations on the upper extremity. It has many other advantages: a large percentage of patients otherwise hospitalized are made ambulant. The difficulty of giving general anesthesia in a dark fluoroscopic room is avoided. Furthermore, in dealing with fractures, one has sufficient time for further manipulation should the roentgen ray show that the application of plaster has disturbed the fluoroscopic reduction.

Dystocia Following Use of Radium in Uterus.—Kane reports three cases in which, after the use of radium, the indurated cervix formed an absolutely impassable barrier to the expulsion of the fetus. Two of the women became pregnant several years after the use of radium, proving that sterilization does not always result. In the second case, pregnancy was undoubtedly present when the radium was applied, which shows that radium is not always fatal to the fetus.

Caudal Anesthesia in Cystoscopy.—In sixteen cystoscopies, ten pyelographies, eight ureteral catheterizations and four fulgurations, Dorman resorted to caudal anesthesia with only four failures. Dorman regards this as the method of choice in all difficult cystoscopies in which local anesthesia is inadequate. When properly administered, it does not produce any untoward results and there are no complications.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 183-228 (Aug. 4) 1928

Unsuccessful Forceps Cases: Causation: End-Results. D. Miller.—p. 183.
Id.: How Far Can They Be Prevented by Efficient Antenatal Care. J. Hendry.—p. 185.
Id. W. F. Shaw.—p. 188.
Diagnosis and Treatment of Human Helminthiasis. C. Lane.—p. 191.
*Use of Subcutaneous Injections of Oxygen. T. S. Kirk.—p. 195.
*Postmortem Findings in Case of Renal Dwarfism. H. A. Cookson.—p. 196.
Herpes and Varicella. N. G. Hill.—p. 197.

Use of Subcutaneous Injections of Oxygen. — Several cases of acute lobar pneumonia have been treated by Kirk with subcutaneous injections of oxygen immediately on admission to the hospital, with uniformly good results. The crisis comes on very rapidly. In a case of pneumonia complicating glossitis, a postanesthetic pneumonia, and a case in a man with a bad fracture of the pelvis the results have all been good. Given subcutaneously, oxygen certainly does not produce any lung trouble or aggravate any existing lung trouble, as it may when inhaled, even if heated; and although Kirk has given it in at least 200 cases, not a single local or general bad effect has been seen, so that it may be considered a perfectly safe procedure. Subcutaneous injections of oxygen, besides being of great use in cases of pneumonia, are of value in all cases of anoxemia, and these are numerous and serious. Chloroform or postanesthetic sickness is due to acidosis, and all Kirk's patients, before being removed from the operating table, are given a dose of oxygen, with the result that sickness is much diminished; since January only one patient out of 200 has developed any postanesthetic pneumonia. A striking effect of subcutaneous oxygen is seen in connection with extensive burns and scalds of the body in which a severe acidosis develops. Of all those with burns and scalds of the trunk treated with oxygen, only one patient has died, but this patient was not admitted till the third day, when the temperature was raised, the pulse rapid, and acidosis well established. Three patients with similar symptoms admitted a few hours after the accident were given oxygen at once, and all did well; at most their urine showed a slight and temporary acidosis. The amount of oxygen given was largely determined by the amount of acid in the urine. Kirk injects from 200 to 400 cc., repeating the dose in six hours if most has been absorbed. A large dose of oxygen can be given as easily and quickly as a dose of serum, and it is less painful.

Renal Dwarfism Without Bone Deformity.—The case recorded by Cookson is of interest because of the absence of bone deformity in a girl, aged 16, who, however, presented all the other features of renal dwarfism.

Guy's Hospital Reports, London

78: 253-378 (July) 1928

James Blundell, and First Successful Hysterectomy for Cancer in Great Britain. A. J. McNair.—p. 254.
*Alternation and Subsequent Combination of Methemoglobinemia and Sulphemoglobinemia in One Patient. R. L. Waterfield.—p. 265.
Methemoglobinemia Due to Poisoning by Antikamnia (Acetanilide): Case. M. O. Raven.—p. 275.
*Influence of Exercise on Digestion. J. M. H. Campbell, G. O. Mitchell and A. T. W. Powell.—p. 279.
*Unusual Type of Insulin Reaction in Diabetic Patient. E. P. Poulton and W. W. Payne.—p. 294.
*Subarachnoid Hemorrhage: Two Cases. R. L. Waterfield.—p. 299.
Biot's Respiration in Superior Vena Cava Obstruction. R. L. Waterfield. —p. 305.
Multiple Gummas of Brain: Case. A. B. Kettle.—p. 309.
*Familial Claw-Foot with Absent Tendon Jerks and with Cerebellar Disease. O. Plowright.—p. 314.
Acute Ascending Myelitis. R. L. Waterfield.—p. 320.
Regional Series of Cases of Malignant Disease Treated with Deep Roentgen Rays. W. L. Watt.—p. 324.
Suction in Treatment of Empyema. E. H. Roche.—p. 332.
Megalocytosis: Simplified Method of Detection. F. A. Knott.—p. 343.
Brood Capsule of Tenia Echinococcus. J. W. Shackle.—p. 349.
Calcium Metabolism in Diseases of Skin. N. Burgess.—p. 350.
Angor Animi, or Sense of Dying. J. A. Ryle.—p. 371.
Small Intestine Obstruction Due to Hodgkin's Disease: Case. J. F. Venables.—p. 377.

Association of Methemoglobinemia and Sulphhemoglobinemia.—Waterfield reports the case of a woman, aged 29, who in 1923 suffered from a pure methemoglobinemia; on readmission in 1926 she suffered from pure sulphhemoglobinemia; after cecostomy and colon lavage this reverted to pure methemoglobinemia, while after colectomy the attacks of cyanosis, which became infrequent and slight, were due to combined methemoglobinemia and sulphhemoglobinemia. There appeared to be a fairly definite connection between the clinical type and the chemical type of attack. Diet, intestinal disinfectants and iron and bismuth had no effect. Oxygen did not affect the cyanosis, but, when administered in a closed mask, gave relief from discomfort. Epinephrine was the only drug that appeared to cut short the attacks of dyspnea. Blood cultures were invariably negative. Cultivation of the stools failed to demonstrate nitrite-forming organisms or other significant bacteria. The possibility of the condition in this case being due to the secret taking of aniline or other drugs was thoroughly investigated and ruled out. The case differed from those previously recorded in the very prominent rôle played by the dyspnea. On no occasion could hydrogen sulphide be found in appreciable quantity in the stools. The blood pigments were confined to the cells and were never found in the serum; there was thus never any spectral change in the urine. In March, 1927, the patient again returned to work as a nurse, and for three months was comparatively well and free from attacks. Unfortunately, at the beginning of June she received a letter from her fiancé breaking off their engagement. This was, to her, the final blow. Three days later she was found by the police suffering from loss of memory. The amnesia lasted for three weeks, and during that time she was perfectly quiet and free from attacks; she never suffered from hallucinations or delusions. Her memory afterward was quite clear, but she rapidly sank into a state of acute depression, refused food for days on end and became extremely violent and suicidal. In spite of a nurse or attendant being with her day and night, she nearly succeeded in taking her life on several occasions. There would be lucid and quiet intervals of a few days, and then a return to the violent suicidal state, which was always preceded by an attack of cyanosis without abdominal pain; whether this was due to methemoglobin or sulphhemoglobin cannot be said, as blood examinations were not made. Between the attacks she would apparently regain her normal color. By the middle of August she became dangerously homicidal. The attacks of cyanosis became more frequent and more severe than ever at this stage; she had intervals during which she had a clear insight into her condition. Her mental condition was of a maniac depressive type. She died from pneumonia in December.

Influence of Exercise on Digestion.—Campbell et al. observed the differences produced in the digestion of the same meal at rest and after taking exercise. In young men moderate exercise such as running 2 or 3 miles slowly soon after a light meal delayed digestion, both the secretion of gastric juice and the rate of emptying of the stomach being retarded, but perhaps hardly as much as would have been expected. Lighter exercise such as walking did not delay the secretion of gastric juice and increased the rate of emptying. Walking with a friend and talking caused more rapid emptying than walking alone, and this showed the importance of psychologic factors. The exercise needed to delay the digestion and emptying of this light meal varied with the fitness of the subject; thus, in one man, walking quickly for an hour was enough, but in another who made a practice of running several miles a day, running 2 miles was not enough. Exercise which produced no discomfort helped digestion, and exercise which produced discomfort delayed it. When the most delay was produced by exercise, the greatest degree of flushing of the skin was observed, and cutaneous vasodilatation with relative anemia of the stomach probably provided the main mechanism by which these effects were produced. This was confirmed by the effect of hot baths, which delayed gastric secretion without having much effect in the rate of emptying, and of baths hot enough to be unpleasant, which delayed gastric secretion as much as running, though the rate of emptying was still not so much delayed.

Unusual Type of Insulin Reaction.—The main interest in the case cited by Poulton and Payne which showed a high renal threshold was the high level of blood sugar at which symptoms of "hypoglycemia" became manifest, and the association of these symptoms with the fall of the blood sugar.

Subarachnoid Hemorrhage.—In both cases reported by Waterfield there was loss of the tendon reflexes. In one case all the arm reflexes were completely absent on both sides. In the second case all the tendon reflexes were absent.

Familial Claw-Foot.—Plowright gives an account of a family which bears a definite resemblance to a "forme fruste" of the Charcot-Marie-Tooth disease. Six members of the family examined were quite normal. Of the five who showed the presence of the disease, three had pes cavus; two had completely absent tendon jerks, and three had some muscular wasting; while all five had tremor and incoordination of the upper limbs.

Journal of State Medicine, London

36: 435-496 (Aug.) 1928

Value of Heliotherapy in Surgical Tuberculosis. A. Rollier.—p. 435.
Importance of Training in Forensic Medicine. S. Smith.—p. 447.

Lancet, London

2: 265-314 (Aug. 11) 1928

*Heart and Circulation in Tropical Avitaminosis (Beriberi). K. F. Wenckebach.—p. 265.
*Later Results of Partial Gastrectomy. N. C. Lake.—p. 268.
Standardization of Scarlet Fever Antitoxin. R. Cruickshank.—p. 274.
*Etiology of Hyperpiesis in Egyptians. A. E. A. Ismail.—p. 275.
*Blood Changes Associated with Liver Diet in Young Convalescents. K. S. Smith and L. E. H. Whitby.—p. 277.
Comparison of "Titanium Ray" with Metallic Tungsten Arc. B. D. H. Watters.—p. 278.
*Abscess of Heart Causing Death Through Coronary Hemorrhage: Case. F. McLagan.—p. 279.

Heart and Circulation in Tropical Avitaminosis.—Wenckebach formulates the hypothesis that the fundamental process in beriberi is water retention and the consequent swelling of certain vital tissues, especially nerve and striated muscle, including the heart muscles.

Results of Partial Gastrectomy.—Lake favors partial gastrectomy in the treatment of peptic ulcer. He says that it is the only operation which removes the cause of the ulceration in the majority of cases and which can be trusted to result in permanent cure. He has not quite enough faith in his convictions to subject to partial gastrectomy all cases of gastric and duodenal ulceration at whatever stage, but treats early cases on medical lines in the hope that some change may thus be effected in the secretory activities of the stomach. In cases of simple duodenal ulceration of short history, a partial gastrectomy appears unnecessarily severe when a safe gastro-enterostomy so frequently relieves the symptoms. If the preoperative test meal reveals a high acid content it is probably wise, even in these cases, to perform a partial gastrectomy and so escape further ulceration, perhaps in the jejunum. In all other cases partial gastrectomy is the operation of choice, and, if the presence of adhesions, penetration of ulcer or difficulty of abscess will obviously render the operation a difficult one, the possibility of anastomosis of the jejunum with the cardiac half of the stomach and the resection of the pyloric end at a subsequent operation, as in the Billroth 2 method, should be considered seriously. In this way an operation, otherwise serious, may be rendered comparatively safe. When gastro-enterostomy has already been performed without relief of symptoms, partial gastrectomy holds out a very good hope of cure. In the absence of jejunal ulceration it is sometimes possible to utilize the gastro-enterostomy aperture, the pyloric end being excised as in the Billroth 2 operation. When the original anastomosis has been performed toward the pyloric end, or when jejunal ulceration is present, the whole is excised with the stomach and a fresh anastomosis is made, usually by the Polya method. The former is a very safe procedure, but the latter may in some difficult cases demand the utmost dexterity and care.

Etiology of Hyperpiesis in Egytians.—Ismail says that chronic primary hyperpiesis in the absence of chronic inflammatory renal changes is quite common in Egypt, and forms at least 10 per cent of all cases in private practice. The disease is especially limited to the two decades between 35 and 55, and

is very rare under 30. The condition is rare after 60. About 10 per cent of the patients are women. In 100 consecutive cases, thirty-seven were fellahs of the middle class, seventeen were lawyers, judges and mental workers, ten were physicians and ten were women; the rest came from clerical and other occupations, two being railway porters. Excess of diet plays a part in acute hyperpiesis in normal subjects of chronic hyperpiesia. Strong emotional disturbance can cause marked rise in pressure. Nerve storms are important causes of rise in pressure in normal subjects, of extra rises in hyperpietic patients, or even of the onset of the disease. Certain substances absorbed from the alimentary tract have a pressor action, and may be operative in acute cases of hyperpiesia. Graver and more permanent symptoms which occur in persons with hyperpiesia are due to arteriosclerosis or its complications, and not directly to the hyperpiesis. Syphilis, at times suspected as a cause, certainly has no relation to the disease. A history of old infectious fever (typhoid, malaria) is quite common, but so high is the incidence of both the infectious fevers and hyperpiesia that no causal relation between them can be established. Alcohol as a cause can easily be dismissed, as the majority of patients had never tasted it. Tobacco seems to lower the tension, and some of those with marked hypotension were heavy smokers (more than forty cigarets daily). Excess of coffee seems to be responsible for temporary rises in pressure in normal individuals and in those with hyperpiesia. The disease is hereditary and social, and in many cases familial. Of 100 consecutive patients seventy-two gave a history of the disease in the father or mother, brothers or sisters, uncles or aunts, suggesting death from one of the complications of the disease. As a control the family history in 100 consecutive cases of other ailments was taken, and in only 25 per cent was there a history of father or mother being affected with symptoms suggesting hyperpiesia.

Blood Changes Produced by Liver Diet.—In order to find out whether the blood changes obtained with liver diet in cases of pernicious anemia were confined only to that disease, Smith and Whitby studied the blood changes produced by the same diet in patients free from any blood disease. The majority of the eleven patients were in surgical wards and were, during the experimental period, convalescing from such surgical conditions as inguinal hernia, tuberculous adenitis and submaxillary abscess; others were in medical wards under treatment for such diseases as mediastinal adenitis and oxaluria. Fresh cooked liver was given daily, the amount varying with the age of the patient. The older patients received 3 ounces daily and the younger ones 2 ounces. A leukocytosis was produced in seven out of the eleven cases. In seven cases also there was an increase in the relative and absolute number of polymorphonuclears. Neither the increase in the total leukocytes nor the increase in the polymorphonuclears was maintained for longer than ten days. Lymphocytes showed a relative but not absolute reduction in nearly all cases. A definite absolute increase in eosinophils was produced in all instances, the striking figure of 61 per cent being found in a case of Hodgkin's disease. An increase in granular or bone marrow cells was also the rule. These results show that the administration of liver to patients who suffer neither from pernicious anemia nor from any other blood disease produces alterations in the blood comparable to those occurring in the treatment of pernicious anemia.

Metastatic Abscess of Heart of Skin Origin.—McLagan reports a case of abscess of the heart apparently resulting from staphylococcal infection of the skin, and without evidence of general pyemia. Death was due to rupture of the abscess into one of the coronary arteries and the pericardial sac, giving rise to a condition which simulated, and was at first mistaken for, cardiac rupture.

Medical Journal of Australia, Sydney

2: 71-100 (July 21) 1928

Epidemic Encephalitis. A. J. Collins.—p. 72.
Mental Aspects of Encephalitis. W. S. Dawson.—p. 74.
Biliary Tract: Recent Advances in Knowledge. H. S. McLelland.—p. 81.
Normal and Abnormal Appendix as Seen by Radiologist. C. E. Dennis.—p. 85.
*Occurrence of Molybdenum in Egg of Domestic Fowl. W. R. Mankin.—p. 87.

Occurrence of Molybdenum in Hen's Egg.—Mankin has discovered that egg white contains molybdenum in the proportion of 0.01 mg. per hundred grams of egg white. A definite result for egg yolk has not yet been determined.

Gazette des Hôpitaux, Paris

101: 993-1008 (July 11) 1928

*Erythromelalgia and Exophthalmic Goiter. P. Sainton and P. Véran—p. 997.

Erythromelalgia and Exophthalmic Goiter.—Sainton and Véran consider that erythromelalgia is without question the rarest of all the syndromes that may be associated with exophthalmic goiter. They report the case of a woman, aged 42, in whom this condition developed six months after the appearance of exophthalmic goiter. The erythromelalgia was characterized by attacks of pain in and redness of the hands, which occurred two or three times a week, usually following muscular fatigue, emotional disturbance, or prolonged immersion of the hands in cold water. The pain was extreme, lasted from three to five minutes and ceased suddenly. The end of the attacks was announced by a sensation of abnormal heat. In the intervals between the paroxysms, the skin of the hands and fingers was of a uniform, salmon color, which disappeared momentarily under digital pressure. The skin was dry, but desquamation was absent and the nails were normal. During the attacks the temperature of the skin in the involved regions was from 1 to 2 degrees centigrade higher than that of the skin of the rest of the body. Inasmuch as the patient gave no definite history of an infection or of rheumatism, the authors feel justified in concluding that the erythromelalgia was due to endocrine disturbance.

Journal d'Urologie Médicale et Chirurgicale, Paris

25: 513-608 (June) 1928

*Syphilis of Bladder. Chocholka.—p. 513.
Lesions of Ureter Following Gynecologic Operations. G. Petrescu.—p. 521.

Syphilis of the Bladder.—During the past twelve years, Chocholka has observed fifty-six cases of syphilis of the bladder. He bases the diagnosis more on the prompt and rapid reaction of the lesions to antisyphilitic treatment than on the results of the Wassermann reaction or on the cystoscopic examination. Sometimes one of two characteristic forms is found: 1. A form in which the bladder mucosa appears dead and is of a dull yellow color like wax. Careful examination reveals the presence of small elevations having the same color as the rest of the bladder. The blood vessels are bluish and give the bladder wall the appearance of marble. 2. A form characterized by the presence of mulberry-like granulations forming torn islets of a reddish-brown color. None of the other excrescences, ulcers, papillomas, and gummas which are found in syphilis of the bladder are characteristic. In his fifty-six cases the author found ulcer twelve times, gumma eight times, papilloma seven times, papules eight times, marble appearance ten times and mulberry appearance four times; in the seven other cases a more or less intense cystitis was present. He reports eleven recently observed cases in support of his contention that syphilis of the bladder is not a rare disease.

Revue de Chirurgie, Paris

66: 181-252, 1928

*Rubber Endoprotheses. P. Delbet.—p. 181.
*Arterial Resection in Obliterative Arteritis. P. Stricker.—p. 214.

Use of Rubber in Operations on Tendons and Nerves, in Repair of Abdominal Wall Defects, and in Treatment of Fractures with Loss of Substance.—In 1886 Delbet found a long rubber tube in a maxillary cyst in a patient who had been operated on twenty years before and had not been operated on since. The tube was still smooth, supple, and elastic. In 1913, in a case in which the extensor tendon of the index finger had become totally adherent to the first phalanx following an infection, he liberated the tendon and, to prevent the reformation of the adhesions, interposed a thin piece of rubber between it and the bone. The operation was followed by a return of function of the tendon and during the following fifteen years the patient has had no trouble referable to the piece of rubber.

In 1914, in a case of a very large abdominal hernia of the large intestine, he repaired the defect in the abdominal wall with a thick sheet of rubber, 7 by 13 cm. The result was excellent and permanent. He than began to study experimentally the reaction of various tissues in contact with rubber. In these experiments he demonstrated the absence of any reaction around aseptic rubber of good quality. In the soft parts a thin connective tissue membrane, which has the appearance of serosa, forms around the piece of rubber. The surface in contact with the rubber is smooth and not adherent to it and prolongations from the external surface do not develop between the neighboring organs. As a result, the tendons and muscles are not restricted in their movements. This membrane, therefore, differs markedly from the fibrous cystlike shells which ordinarily form around foreign bodies. Delbet therefore began to use rubber widely. The method is indicated particularly in preventing adhesions and in reconstructing tendon sheaths and in replacing aponeurosis. Reinforced rubber protheses may also be used in fractures of the long bones with loss of substance. The technic employed is described in detail and illustrative cases are discussed. The only objectionable feature of the method is that the slightest infection causes the elimination of the piece of rubber or renders necessary its removal. In twelve cases in which an endoprothesis was introduced in connection with tendons and nerves, one elimination occurred, and in eleven cases in which it was used for eventration the sheet of rubber had to be removed four times.

Extensive Arterial Resection in the Treatment of Certain Forms of Obliterative Arteritis.—In four cases of localized obliterative arteritis reported by Stricker excellent results were obtained by the resection of long segments of the thrombosed arteries. This method is not indicated in young persons with Buerger's disease or in old persons with generalized arteriosclerosis or with very extensive arterial obliterations, but it gave excellent results in a series of cases of juvenile or presenile arteritis in which the obliterative process was still localized.

Schweizerische medizinische Wochenschrift, Basel

58: 717-740 (July 21) 1928

*Bile Peritonitis Without Recognizable Perforation. E. Ruppanner.—p. 717.
Sphincter Hypertrophy as Cause of Chronic Retention of Urine. F. Suter.—p. 719.
Growth Disturbance in Fore-Arm from Premature Ossification of Epiphyseal Cartilage Following Trauma. A. Vischer.—p. 721.
False and True Tumors of Capsule of Knee Joint. C. Wegelin.—p. 722.
Results of Operation for Prostatic Carcinoma. H. Wildbolz.—p. 726.
Thoracoplasty. C. Roux.—p. 729.

Bile Peritonitis Without Recognizable Perforation.—Ruppanner reports a case of bile peritonitis with macroscopically intact gallbladder. There was fat necrosis in the abdominal cavity and the common bile duct was occluded by a stone in Vater's papilla. Microscopic examination of the mucous membrane of the gallbladder showed digestive necrosis. Tryptic and amylolytic ferments were demonstrated in the gallbladder contents. His explanation is that the occlusion of Vater's papilla had prevented the outflow of the bile and also of the pancreatic juice. The trypsin-containing pancreatic secretion found its way into the gallbladder and caused necrosis of its wall. Bile and pancreatic juice filtered through the necrotic areas into the free peritoneal cavity.

Archivos Españoles de Pediatría, Madrid

12: 257-382 (May) 1928

*Parkinson's Disease in a Girl Aged Six. Martinez Vargas.—p. 257.
Lymphatic Keratoconjunctivitis. M. Marín Amat.—p. 273.
*Allergic Urticaria of Alimentary Origin. A. Argüelles Terán.—p. 303.

Parkinson's Disease in a Child of Six.—Vargas describes the case of a girl, aged 13, who had paralysis agitans. She presented symptoms of the disease when 6 years old, and he thinks it started at the age of 3. The disease became worse in spite of medication. The girl was not able to dress herself or to eat alone.

Allergic Urticaria of Alimentary Origin.—Argüelles Terán gives a splenic extract mildly acidified with phosphoric acid or hydrochloric acid before meals. He found that cases were favorably modified that were persistent to other medication.

Archivos de Medicina, Cirugía y Espec., Madrid

28: 641-668 (May 19) 1928

Prophylactic Value of Malaria in Neurosyphilis. B. Rodriguez Arias.—p. 641.
*Intermittent Claudication: Treatment. C. Cortés.—p. 642.
Spinal Anesthesia in Strangulated Hernia. F. D. Alsina.—p. 645.
Heart Diseases in Pregnancy. L. Trias de Bes.—p. 650.
Arterial Hypertension. L. Calandre.—p. 654.
Catheterization of Ejaculatory Ducts. R. le Fur.—p. 660.

Treatment of Intermittent Claudication.—Cortés says that only three methods of treatment have given any results—diathermy and administration of insulin and of sodium nitrite. In three of five cases treated with insulin, he obtained no results; in one case he had a complete success. One case is not so clear since insulin administration was combined with diathermy treatment. Diathermy allays the pain in most cases. Recently he has used intramuscular injections of sodium nitrite in doses of from 0.04 to 0.06 Gm., two or three times a week. As yet he has had no occasion to treat claudication of the lower extremities by this method. In two cases of angiospasm of the fingers with sensation of dead finger and marked ischemia it gave excellent results.

28: 669-696 (May 26) 1928

*Spontaneous Fractures in Undulant Fever. J. Cuatrecasas and L. Garcia Tornel.—p. 669.
Symphyseotomy (Zarate's Method). S. Dexeus Font.—p. 671.
*Fever and Tachycardia in Cerebral Tumors. G. R. Lafora.—p. 673.
Postoperative Pancreatic Insufficiency. J. Bergareche.—p. 681.
Syphilis of Ear. J. Ramadier.—p. 683.
Filtrability of Tubercle Bacillus. J. Valtis.—p. 687.

A Probable Case of Undulant Fever with Spontaneous Fractures.—The case reported by Cuatrecasas and Garcia was that of a man, aged 52, who had traveled in rural communities and who had recently drunk boiled goat's milk. The first symptoms were pains in the nape of the neck, making movement of the neck difficult, asthenia and anorexia. Eight months later fever developed (39 C. with slight variations), accompanied by profuse sweating, exacerbation of the pains in the neck and disseminated pains in different muscle groups. For two weeks he had cough with abundant mucopurulent expectoration and difficult breathing. A year after the beginning of the disease, when the authors first saw the patient, the abdomen was enlarged. Small subcutaneous masses that were neither movable nor painful were present on the anterior aspect of the thorax. A few days later new masses had developed on the lateral aspects of the thorax, and several of the ones already established had increased in size to a hen's egg. During respiratory movements there were sounds of bone crepitation. He found several complete costal fractures. Each hematoma was related to a costal fracture.

Fever and Tachycardia as Sign of Cerebral Tumors.—In a number of cases of brain tumor, especially of the anterior and medial fossae, Lafora noted a persistent tachycardia of from 104 to 112, and less frequently a temperature of from 37.5 to 38.5 C. Upon operation a tumor of rather large dimensions was found.

Prensa Médica Argentina, Buenos Aires

14: 1221-1256 (May 10) 1928

Traumatic Ossification of Temporal Muscle. J. Diez and P. A. Etchegorry.—p. 1221.
Finger Formation on Stump of Fore-Arm. T. Gioia.—p. 1226.
*Roffo's Reaction. F. Carranza.—p. 1229.
Diabetes: Complication and Prognosis. F. Umber.—p. 1231.

Specificity of Roffo's Reaction.—Carranza applied Roffo's test in 814 cases of tumor (various kinds) and in 3,067 cases of inflammatory disease. In 532 of the serums from tumor cases he obtained positive reactions, while only twenty-three of the serums of the inflammatory series gave a positive reaction.

Deutsche medizinische Wochenschrift, Berlin

54: 1151-1194 (July 13) 1928. Partial Index

Tumor Problem. B. Fischer-Wasels.—p. 1151.
*Differential Diagnosis of Acute Swellings in Region of External Inguinal Ring and Scrotum. Hellner.—p. 1156.
*Diseases of Genital Organs Secondary to Acute Infections in Pharynx. H. Küstner.—p. 1158.
*Blood Transfusion in Gynecology and Obstetrics. G. Haselhorst.—p. 1160.

*Ileus in Pregnancy. H. Kemkes.—p. 1161.
Production of Cancer in Mice by Tar. J. Barnewitz.—p. 1162.
Allergic Phenomena in Rheumatic Diseases. H. J. Ditges and A. Fischer. —p. 1164.
*Injury of Spinal Cord by Lightning. F. Preissner.—p. 1164.
Diagnosis of Intestinal Invagination in Infants. E. Burghard.—p. 1165.
Preservation of Diagnostic Serums and Bacterial Emulsions. J. von Darányi.—p. 1167.

Differential Diagnosis of Acute Swellings in Region of External Inguinal Ring and Scrotum.—In a child, aged 2, a long oval swelling developed in the flexure of the right groin, with pain but without vomiting or constipation. The right side of the scrotum was empty and the father affirmed that it had never contained a testis. The child was sent to the clinic with the diagnosis "incarcerated hernia," but in view of the above facts Hellner diagnosed incarcerated inguinal testis. At operation, by which this diagnosis was confirmed, the testis was found to be bluish-red in color (hemorrhagic infarction was revealed later by microscopic examination) and was removed. The incarceration was at least 24 hours old. Another case described was of acute fibrinous inflammation of the tunica vaginalis in a child, aged 3. The right half of the scrotum was swollen, red and painful. A diagnosis was not made. At operation a tumor, representing a continuation of the thickened spermatic cord, was found. It was taken to be the swollen testis. Incision revealed a yellowish white fibrous mass. There was torsion of the spermatic cord to 180 degrees. The testis was removed. Examination showed the testis and epididymis, unchanged, in the midst of the fibrous mass. The torsion of the spermatic cord caused a circulatory disturbance, which in turn led to an acute hydrocele; fibrinous serositis rapidly set in, soon followed by leukocytic infiltration. The inflammation appears to have been aseptic; infection, if existent, was slight. The third case was that of a 3 months old child with acute hydrocele of the spermatic cord. There was acute swelling of the region of the external inguinal ring and the upper half of the scrotum without much general disturbance, but with a temperature of 38 C. Operation was performed under the diagnosis of incarcerated hernia.

Diseases of Genital Organs After Acute Infectious Disease in Pharynx.—Küstner has seen a number of cases of acute endometritis and adnexal infection following acute infectious diseases of the nasopharynx. The genital involvement appeared to be secondary. The localization appeared to depend on the condition of the endometrium or ovary at the time that the organisms were circulating in the blood; i. e., the endometrium became infected at the time of menstruation, the ovary at the time of the bursting of the follicle. The cases of endometritis yielded promptly to ergot and warm sitz or full baths. Irrigation should be avoided. When the ovary is involved, the clinical picture and the observation on palpation may simulate extra-uterine pregnancy or retro-uterine hematocele in a striking manner. In two cases he operated and found typical signs of fresh infection in the adnexa on one side. In one case there was a fairly large abscess cavity with sterile contents. In the remainder of his cases of adnexal infection, conservative treatment brought about rapid cure. In all these cases the patients had had sore throat in the intermenstrual period. In the early part of the puerperium, slight inflammation of the nose or throat never causes serious inflammation in the uterus; tonsillitis, however, may do so. Later the uterus loses the resistance against metastatic infection which it possesses early in the puerperium. Pfeiffer's bacillus does not readily infect the genital organs secondarily.

Blood Transfusion in Gynecology and Obstetrics.—The hemostyptic effect of blood transfusion can be utilized to advantage, Haselhorst points out, in numerous gynecologic cases. Both functional metrorrhagias and hemorrhages connected with myomas frequently yielded to blood transfusion. In extra-uterine pregnancy with acute internal hemorrhage, Haselhorst's practice is as follows: If the anemia is not very severe, drip infusion after operation suffices. With pronounced anemia with no immediate danger to life, he reinfuses the blood from the abdominal cavity, but only if it is macroscopically unchanged. If there are macroscopic changes, he gives a blood transfusion immediately after operation. In very severe cases with obvious lack of oxygen carriers, he transfuses from 800 to 1,000 cc. of blood immediately before the operation. He has found the fear that infused blood will escape from the opened vessels at the site of insertion of the ovum, during the few minutes before operation, to be unjustified. He believes that most cases of death from loss of blood at abortion could be prevented by the rapid infusion of blood in sufficient quantities. Promptness and sufficient amounts of blood are the chief factors in the success of transfusion in obstetric emergencies. The difference in the effects of intravenous infusion of solution of sodium chloride and of blood transfusion is striking.

Ileus from Rupture of Uterus.—A woman, aged 25, sustained a complete rupture of the uterus at the end of her second pregnancy and fourteen months after abdominal cesarean section performed because of eclampsia. The uterine rupture was not recognized by the attending physician. Three days later he sent her to the hospital on account of ileus. The cause of ileus was not made clear before operation. At operation it was found to be a kinking of the transverse colon in the region of the hepatic flexure, the result of pressure by the left shoulder of the fetus, which, enclosed in the amniotic sac, had escaped through the rent in the uterus, together with the placenta. The fetus was removed, the uterus amputated above the vagina and the abdomen closed. The intra-abdominal bleeding had been slight and peritonitis did not occur. The woman recovered.

Isolated Permanent Injury to Spinal Cord by Lightning, with Symptoms Simulating Multiple Sclerosis.—A previously healthy man, aged 24, without hereditary taint, was struck by lightning while working in a windmill. He was unconscious for three hours and for a while was unable to move the trunk or lower extremities; the hands were numb. There were superficial burns on the face, neck and chest. The passage of the current had left marks on the left thumb, the back of the left foot and over the spinous processes of the second and third lumbar vertebrae. For two days there was complete retention of feces and urine. Examined about nine months later, the patient presented a more marked abdominal reflex on the right side than on the left, persistent knee and Achilles clonus on both sides, positive Rossolimo and Mendel-Bechterew, positive Babinski on the right side, pronounced spastic ataxia of both legs, uncertain gait; there were no sensory disturbances or muscle atrophy; the urine, blood and cerebrospinal fluid were normal and the psychic condition was undisturbed. The father, who was looking out of the window in the room in which the son was working at the time of the injury to the latter, was unaware that the lightning had struck.

Klinische Wochenschrift, Berlin

7: 1305-1352 (July 8) 1928. Partial Index

History of Ehrlich's Side-Chain Theory. B. Heymann.—p. 1305. C'cn. Inflammation and Physical Condition. F. Kauffmann.—p. 1309.
Endocrine Function of Interstitial Cells of Testis. E. J. Kraus.—p. 1315.
*Blood Group Research on Mothers and Children. F. Schiff.—p. 1317.
Visual Area of Cortex and Binocular Vision. R. von Volkmann.—p. 1320.
*Polyneuritis Following Acute Thallium Poisoning. R. Greving and O. Gagel.—p. 1323.
*Specific Serum Treatment of Pneumonia. A. Lechner.—p. 1325.
"Physical and Chemical Conditions of Bone Formation." K. Klinke.—p. 1327.
Reply. A. Nitschke.—p. 1328.
Influence of Excitation of Carotid Sinus on Potassium, Calcium and Choline of Blood. D. Danielopolu, Maxim, I. Daniel and G. G. Proca. —p. 1329.

Blood Group Research on Mothers and Children.—Schiff compared the blood groups of 1,200 mothers with their 1,200 children; most of the children were new-born infants. The results uphold the reliability of Bernstein's formula and give no grounds for the assumption of exceptions.

Polyneuritis Following Acute Thallium Poisoning.—Three days after attempted suicide with a preparation of thallium, sold as rat poison, Greving and Gagel's patient experienced slight sensory disturbances. About eight days later there were, in addition to severe neuralgia in the lower extremities, typical motor polyneuritis with flaccid paralysis of the lower extremities, reaction of degeneration and occasional incontinence of bladder and rectum. Tachycardia and a condition resembling angina pectoris followed, with emaciation and weakness. The finger nails presented a trophic disturbance in the form of

white bands. These symptoms continued for about six months; the polyneuritic phenomena lasted even longer.

Specific Serum Treatment of Pneumonia.—Lechner gives particulars of five cases of pneumonia treated with pneumococcus serum. One hundred cubic centimeters of the serum is injected very slowly into a vein four hours after desensitization with 1 cc. of the serum injected subcutaneously. The serum appeared to act exclusively against the toxic phenomena; it influenced particularly the fever, the respiration and the pulse. The resolution of the pneumonia did not take place more rapidly than in patients not treated with serum. An acute pneumococcus endocarditis, present in one of the patients, was not influenced. The serum does not appear to have bactericidal properties of importance. It is advisable that the type of pneumococcus responsible for pneumonia be ascertained and the appropriate serum used. If this is impractical, a polyvalent pneumococcus serum may be used.

7: 1353-1400 (July 15) 1928. Partial Index

Chemical Pathology of Vomiting. F. Mainzer.—p. 1353.
Blood Washing. G. Haas.—p. 1356.
Physiology of Water Metabolism. K. Dresel and Z. Leitner.—p. 1362.
Mechanism of Synthalin. H. Staub and O. Küng.—p. 1365.
*Effect of Roentgen Irradiation of Pituitary Region in Multiple Metabolic Disturbances of Central Nervous System. R. Heilig.—p. 1366.
*Chronic Prostatitis from Standpoint of Internal Medicine. A. V. Knack and H. Simon.—p. 1369.
Sugar Retention and Sugar Formation in Liver After Administration of Dextrose. F. Borodulin.—p. 1373.
"Treatment of Gonorrhea." A. Loeser.—p. 1375.
Reply. M. Gumpert.—p. 1375.
Variations in Potassium and Calcium of Blood Serum in Dermatoses. E. Nathan and F. Stern.—p. 1375.
Genital Hormone in Male Urine. S. Loewe, H. E. Voss, F. Lange and A. Wähner.—p. 1376.
Formation of Murmurs in Heart Defects—Vertebral Theory. S. Bondi. —p. 1377.

Effect of Roentgen Irradiation of Pituitary Region in Multiple Metabolic Disturbances of Central Nervous System.—The application of roentgen rays to the vegetative centers localized in the midbrain in Heilig's patient resulted in marked polyuria without increased excretion of sodium chloride, in return to normal of the specific dynamic action of protein, which had at first been entirely absent, regular appearance of the menses, which had been absent for months, and cure of a subfebrile condition that had resisted treatment for nearly two years. Encephalitic foci in the midbrain were assumed, to explain the particular susceptibility of the patient to the rays.

Chronic Prostatitis from Standpoint of Internal Medicine.—Knack and Simon call attention to the prostate as a possible focus of infection in internal diseases. Microscopic examination of the secretion should supplement palpation of the gland. Systematic examination of 326 patients received in the department for internal medicine under various other diagnoses revealed chronic prostatitis in 52 per cent.

Monatsschrift für Kinderheilkunde, Leipzig

38: 481-576 (May) 1928

Breast Feeding in Pregnancy. H. Stux.—p. 481.
*Butter-Meal in Infant Feeding. G. Jungwirth.—p. 500.
*Treatment of Diabetes Mellitus in Children. F. Thoenes.—p. 507.
Combating Contagious Diseases in Children's Hospital. O. Herz.—p. 527.
*Circumcision Tuberculosis. Fedders.—p. 537.

Knoepfelmacher's Modified Butter-Meal in Infant Feeding.—Knoepfelmacher's modified butter-meal is a concentrated food: 130 Gm. of milk, 10 Gm. of flour, 10 Gm. of butter, and 15 Gm. of sugar boiled down to 100 Gm. It has the highest calorie content of all the baby foods now in use (100 Gm. of butter-meal, 85 calories; 100 Gm. of Moro's modified butter-meal, 160 calories, and 100 Gm. of Knoepfelmacher's modified butter-meal, 260 calories). In forty out of fifty-five cases of dystrophy following dyspepsia or pylorospasm, atrophy, persistent vomiting, premature birth, syphilis, whooping cough, pneumonia, tuberculosis, and rickets, Jungwirth obtained good results with it. He believes that the superiority of Knoepfelmacher's modified butter-meal is due to the high colorie content, which makes it possible to obtain a rapid increase in weight during the convalescence of undernourished children and supplies an adequate amount of energy for combating dystrophy. The food is contraindicated in unsatisfactory swallowing of the thick meal, dyspepsia and intoxication, and in infants aged less than 2 or 3 months.

Treatment of Diabetes Mellitus in Children.—Thoenes considers that insulin is indicated even in light cases of diabetes in children. The diet, however, should always be controlled, inasmuch as the severity of the condition can be judged by the reaction of the organism to an approximately normal diet. The amounts of sugar and acetone excreted in the urine and the sugar content of the blood during fasting are as significant as the determination of the amount of insulin and the time required to produce a normal metabolism. All precomatose and comatose patients are given large quantities of carbohydrates (dextrose, raw sugar, and, later, oatmeal-water) simultaneously with the administration of large doses of insulin. The carbohydrates are only gradually replaced by fat and protein until the desired proportion is reached; at the same time, the doses of insulin are reduced.

Cure of Circumcision Tuberculosis with Ultraviolet Rays.—Fedders reports a case of circumcision tuberculosis in an infant, aged 1 month, in which the ulcer spread and destroyed the glans and a part of the corpora cavernosa. After various kinds of treatment had been tried without success, local and general irradiations with ultraviolet rays were given; very soon a marked tendency toward healing was noted and in four months the lesion had healed completely. No symptoms of recurrence have been noted during the following five years.

39: 1-192 (June) 1928

Effect of Heliotherapy on Blood Dust in Different Forms of Anemia. G. Gelli.—p. 1.
Psychology of Childhood. J. S. Galant.—p. 10.
*Treatment of Empyema in Infants and Young Children. L. Silber.—p. 35.
*Pneumonia and Pneumococcic Diseases in Infants. R. Grosser.—p. 40.
*Skin Reactions with Helminthic Extracts. F. K. Cieszyński.—p. 64.
Helminthiasis, Especially in Childhood. H. Brüning.—p. 72.
Infants' Chair for Use in Roentgenography. G. Abraham.—p. 100.
Mediastinal Emphysema Due to Alveolar Rupture in Infancy. E. Stransky.—p. 104.
Constitutional Anomalies with Lymphadenosis and Lymphocytosis in Children Under Weight at Birth. S. Rosenbaum.—p. 113.
Syndrome of Intoxication in Animal Experiments. S. Rosenbaum.—p. 121.

Treatment of Empyema in Infants and Young Children.—Silber considers Gralka's method of irrigating the pleural cavity with ethylhydrocupreine hydrochloride the method of choice for the treatment of empyema. For very young infants, however, the treatment is too severe; frequent puncture, combined with intramuscular blood injections, is preferable. By the use of these methods, the mortality was lowered from 79 per cent for cases treated up to 1922 to 67 per cent for those treated since 1923.

Pneumonia and Pneumococcic Diseases in Infants.—Grosser divides the forms of pneumonia appearing in infants into two groups: (1) localized pneumonia without general infection; (2) the septico-toxic form, which he calls "pallid pneumonia." In the former, which is of secondary nature, the prognosis is favorable, and the course of the disease is without complications; kidney disturbances, in particular, are absent. In "pallid pneumonia" the prognosis is very unfavorable and complications are frequent. The most marked symptom is the sallowness of the skin, which is due to the accumulation of blood in the splanchnic region. When the heart fails, this color changes to a livid pallor. The lung symptoms, in contrast to those of the localized form, are slight. The author believes that this pallid pneumonia is hematogenous, on the following grounds: (1) outbreak of the disease following a slight inflammation of the nasopharynx after an interval of from three to seven days; (2) definite metabolic changes in the interval; (3) outbreak of a severe general disease with all the possibilities of toxic and septic organic injury; (4) the transition into such isolated organic diseases as meningitis and peritonitis and the appearance of these diseases during influenza epidemics; (5) finding of the pneumococcus in animals injected with the patient's urine; (6) the establishment of a certain degree of immunity so that, if there is a relapse, it appears as a localized, nonseptic disease.

Production of Skin Reactions in Children by Means of Helminthic Extracts.—From experiments with extracts of ascarides and of oxyurids, Cieszyński has come to the conclusion that these extracts contain certain toxins which cause more or less marked cutaneous reactions in the majority of

children. These reactions are not specific, being no stronger in those children having intestinal worms than in those without, and therefore are of no diagnostic value.

Münchener medizinische Wochenschrift, Munich

75: 1191-1230 (July 13) 1928. Partial Index

Respiratory Corset. H. von Hattingberg.—p. 1191.
Hallux Rigidus. C. Mau.—p. 1193.
Abderhalden's Interfereometric Reaction in Chronic Polyarthritis and Endocrine Disorders. A. Zimmer, E. Lendel and W. Fehlow.—p. 1196.
*Involvement of Lower Respiratory Passages in Scarlet Fever. H. Deicher, S. Tannhauser and A. Salinger.—p. 1199.
*Injuries to Circulatory Apparatus from Influenza. G. Hubert.—p. 1202.
Benign Tumors of Ovary After Menopause. H. Kohler.—p. 1204.
Autohemotherapy in Encephalitic Phenomena in Influenza and Lethargic Encephalitis. H. Kraus.—p. 1205.
*Treatment of Varicose Veins by Obliteration. K. Siebert.—p. 1205.
New, Simple Method of Simultaneous Tissue Staining. R. Hollborn.—p. 1208.

Involvement of Lower Respiratory Passages in Scarlet Fever.—Deicher et al. report on thirteen cases of scarlet fever in children and adults in which there was serious involvement of the lower respiratory passages. In a number of these cases the process was not a descending one, but originated in the larynx, trachea, or bronchi. In one case the tracheitis preceded the tonsillar inflammation by twenty-four hours. In four cases the inflammation descended to the lungs and in three extended thence to the pleura. Streptococcus empyema following scarlet fever has been considered as usually a fatal complication. Two of the authors' patients recovered, owing, the authors believe, to intrapleural injection of an acridine dye which kills streptococci in vitro in dilution of 1 : 3,000,000. There were three deaths in the entire series of thirty-eight patients. The coughing up of the discharge, which is partly mucous, partly purulent and is mixed with crusts, is highly painful, but must be encouraged. In addition to the usual expectorants, the authors used cold packs to produce forced respiration and thus prevent the extension of the process to the lungs. In the cases with symptoms of stenosis, continuous hot packs were used. Inhalations proved useful. Tracheotomy gives bad results and must be avoided if possible. They recommend serum therapy.

Injuries to the Circulatory Apparatus from Influenza.—During the course of the influenza there may occur bradycardia from intoxication of the vagus center and injury to the blood vessels with subcutaneous, intestinal or pulmonary hemorrhages. The pulmonary hemorrhages may be followed by general vasomotor paralysis. This weakness of the vasomotors may occur in mild cases. Phlebitis and venous thrombosis may also complicate the acute stage. In the author's 157 cases of circulatory disturbances appearing as sequelae of influenza, the primary disease was without exception mild. He suggests that the explanation may lie in insufficient active immunization of the organism. Among the late results are vasomotor neurosis of the cardiac or peripheral vessels or both. When limited to the heart, they take the form of toxic vasoconstriction in the coronary region. These functional spasms of the coronary arteries must be differentiated from angina pectoris on a sclerotic or syphilitic basis; spontaneous recovery is the rule. Symptomatically they are indistinguishable from true angina pectoris. Nitroglycerin has no effect, while tonics, hydrotherapy, and sedatives give good results. Peripheral vasodisturbances are much more frequent. The asthenic type, women and young persons are predisposed. The symptoms vary according to the region affected—vertigo when the cerebral vessels are involved, sensations of cold and numbness when the vessels of the lower extremities are involved. Another sequela which may appear months after influenza is injury to the myocardium. The degree of injury varies; it may cause complete invalidism. A sensation of pressure is the most common symptom. He saw two cases of dry pericarditis.

Treatment of Varicose Veins by Obliteration.—The fact that the specific gravity of the injected substance is high causes it to sink to the lower wall of the vein, with the patient prone (the position promising the most success). It is propelled by the blood stream in contact with the wall, instead of mixing with the blood. This behavior explains the phlebitic and periphlebitic reactions sometimes seen at a distance from the site of injection and also the great extent of the thrombotic process that follows a single injection. The possibility of thrombosis of the femoral vein exists theoretically through the injected fluid, unmixed with the blood, making its way through communicating branches. Hence Siebert usually limits the quantity to 5 cc. He believes that the pain sometimes experienced shortly after the injection (particularly when solution of sodium chloride is used) is caused by muscle spasms, the fluid reaching the veins of the musculature by branches anastomosing with the subcutaneous veins. Here the irritation is in some unknown way conveyed from the vein to the muscle. A curious phenomenon that he observed in one of his women patients was increased growth of hair along the course of the obliterated veins. It appears that the periphlebitic inflammation transmitted to the skin may stimulate hair growth. Later he noted the same phenomenon, but less marked, in other cases.

Wiener klinische Wochenschrift, Vienna

41: 1033-1072 (July 19) 1928. Partial Index

Progress in Dermatology and Venerology. L. Kumer.—p. 1033.
Group-Specific Absorption Properties of Blood Lipoids. L. Lattes, P. Schneider and K. von Beöthy.—p. 1038.
Benzidine and Guaiac Reaction in Urine: Rôle of Uric Acid. O. Weltmann and W. Waschta.—p. 1041.
*Agranulocytosis. J. Zikowsky.—p. 1044.
Diseases of Myocardium. C. Sternberg.—p. 1045.
*Paralysis of Muscles of Eye After Spinal Anesthesia. N. Blatt.—p. 1048.
Life Prospects After Pulmonary Disease. M. Sternberg.—p. 1051.
Domestication Factor in Origin of "Winter Peak" of Diseases of Respiratory Organs. O. Kirsch.—p. 1054. C'td.

Agranulocytosis.—Two further cases of so-called agranulocytosis in which streptococci were demonstrated in the blood are reported by Zikowsky. He believes that this disease is a severe form of sepsis occurring in a weakened organism and resulting in injury to the leukopoietic system as such and in paralysis of the organ complex (liver, spleen, endocrine glands) the secretions of which stimulate the bone marrow and regulate the entrance of the granular cells into the blood stream. The cases here reported proved fatal, but a previous case is referred to, in which, when the paralysis was overcome, the blood picture rapidly returned to normal.

Paralysis of Muscles of Eye After Spinal Anesthesia.—Blatt reports two cases of abducens paralysis occurring after appendectomy under spinal anesthesia. In one case the paralysis was bilateral and was accompanied by miosis and exophthalmos on the right side. It persisted for several months. The primary disease in this case was severe and the operation was difficult. In the other case the paralysis was confined to the right side, was uncomplicated and cleared up in a short time. In this case the appendicitis was mild and the operation presented no difficulties. The anesthetic preparation was the same in each case and in each the paralysis appeared from eight to ten days after the operation. Both patients were distinctly neuropathic and Blatt advises caution in employing spinal anesthesia in patients with neuropathic constitution. If it must be used, strychnine or caffeine should be mixed with the anesthetic.

Zeitschrift für Kinderheilkunde, Berlin

45: 445-602 (May 21) 1928. Partial Index

Clinical Classification of Pulmonary Tuberculosis in Children. W. D. Markuson.—p. 462.
Enzymes in Blood and Gastric Juice of Infants. A. F. Tur.—p. 468.
Prognosis of Tuberculosis in Children. F. Mandl.—p. 487.
Specificity of "Vaccinal Skin Reaction." A. Solé.—p. 497.
Early History of Pediatrics in Vienna. S. Ghinopoulo.—p. 501.
Aleukia Following Polyarthritis. A. Baisch.—p. 514.
Cardiac Displacements in Infants. J. Jahr and W. Hirsch.—p. 530.
Sputum Tenacity in Various Diseases. J. Jochims.—p. 542.
*Brain Abscesses Following Whooping Cough. H. Sternberg.—p. 567.
Congenital Pyloric Stenosis. R. Priesel.—p. 579.
*Osteomyelitis Gummosa in Infants. R. Priesel.—p. 586.
Neurosis of Vegetative System (Feer) in Child. E. Nobel.—p. 597.

Brain Abscesses Following Whooping Cough in an Infant.—Sternberg reports a case of multiple brain abscesses in a child, aged 8 months. Two months after recovery from an attack of whooping cough with persistent bronchitis, spastic contractions with subsequent motor paralyses appeared; these remained strictly limited to the right side of the body. In the cerebrospinal fluid, in which no changes were noted previously during the entire five months that the patient was ill, pus was found five days before death; from the pus a pure culture of *Staphylococcus aureus* was obtained. At necropsy three very

large brain abscesses, which were filled with greenish pus and which had destroyed almost the entire left hemisphere of the brain, were found. Both the markedly dilated lateral ventricles and the third ventricle contained a purulent exudate. Microscopic examination revealed that the wall of the brain abscesses consisted of an inner layer of granulation tissue and an outer layer of connective tissue. In the ventricles almost all the ependyma was present, but its inner surface was covered by a thin layer of granulation tissue, the cells of which grew out into the ventricular fluid at numerous points. The author considers that in all probability the brain abscesses developed in connection with the whooping cough and the resulting bronchitis and that after five months some of the micro-organisms passed through the wall of one of the abscesses (no point of rupture could be demonstrated) and produced a fatal pyocephalus.

Diagnosis of Syphilitic Involvement of Bones in Infancy.—In cases of bone disease in infants in which there is any suspicion that the condition may be syphilitic, Priesel recommends that the inner side of the proximal one fourth of each tibia be examined, because this is the most common location of syphilitic infiltrates. The sagittal projection is the one most suitable for making such examinations.

Zeitschrift für klinische Medizin, Berlin

107: 607-812 (May 19) 1928

Action of Synthalin on Blood Sugar. H. Staub.—p. 607.
Sodium and Potassium Salts in Dropsy. A. Magnus-Levy.—p. 659.
Metabolic Balance Following Injections of Magnesium Chloride. A. Magnus-Levy.—p. 671.
Human Sleep Curve. H. Regelsberger.—p. 674.
*Blood Concentration and Bilirubin Value. A. Beutel and J. Heinemann. —p. 693.
Diazo Reaction of Blood as Test of Liver Function. L. S. Hannema. —p. 700.
Clinical Value of Xanthoprotein Reaction in Blood. M. Goldman, Sr., and J. Burniewicz.—p. 716.
*Acid-Base Equilibrium and Leukocyte Picture. E. Földes and I. Sherman. —p. 731.
Rôle of Lipoids in Vegetative System. K. Dresel and R. Sternheimer. —pp. 739, 759, 785, 796 and 803.

Increase of Bilirubin Value of Blood, Produced by Decrease in Concentration of Blood, in Patients with Icterus.—In seventeen patients with liver diseases Beutel and Heinemann demonstrated that the production of hydremia (shown by erythrocyte count and refractometric determination of serum protein) was always accompanied by a marked increase in the bilirubin value of the blood. This increase varied from 50 to 300 per cent of the original value. In some of the cases a later decrease to below the original value was noted.

Changes in Rabbit's Blood Picture Following Administration of Acid and of Alkali.—Experimenting on rabbits, Földes and Sherman found that administration of acid leads to an increase in the percentage of polymorphonuclear leukocytes, whereas administration of alkali leads to an increase in the percentage of lymphocytes; the monocyte count usually parallels the polymorphonuclear leukocyte count. The authors consider that these changes in the white blood picture are the result of changes in the reaction of the blood. An acid reaction of the blood, therefore, produces a relative polymorphonuclear leukocytosis and an alkaline reaction a relative lymphocytosis. The administration of acid or alkali also produces changes in the total number of leukocytes, but these changes are not characteristic.

Zentralblatt für Gynäkologie, Leipzig

52: 1753-1816 (July 14) 1928

Relations Between Anterior Lobe of Pituitary Body and Ovaries. A. Mahnert.—p. 1754.
Induction of Labor. F. Wittenbeck.—p. 1759.
Roentgenography of Female Genital Organs with Contrast Substance. G. K. F. Schultze—p. 1770.
*Gonococci in Dried Secretions. R. Joachimovits.—p. 1780.
Tumors of Omentum. E. M. Fuss.—p. 1782.
*Idiopathic Diarrhea of Pregnancy. H. Thomson.—p. 1790.
Cyst of Urogenital Sinus. C. U. von Klein.—p. 1791.
Third Appearance of Eclampsia in Same Patient. Laun.—p. 1792.
Intra-Uterine Skeletization of Fetus. H. Levy.—p. 1796.

How Late Can the Presence of Gonococci be Established in Dried Vaginal and Cervical Secretion?—The presence of gram-negative gonococci was definitely ascertained in two specimens of vaginal secretion dried on linen after twelve and twelve and one-half months, respectively. In the cervical secretion gonococci were found seventeen months after the specimen was taken. Joachimovits concludes that in cases of gonorrhea in women the presence of the causative organism in the secretion dried on the clothing can be demonstrated up to seventeen months.

Idiopathic Diarrhea in Pregnancy.—Thomson's patient, a woman, aged 42, reported that she had borne five children and that she had undergone about twenty induced abortions. During each pregnancy she had suffered from diarrhea, which ceased immediately when pregnancy was interrupted in the second or third month, and ceased in the third or fourth month when she carried to term. The patient's general health was good.

52: 1817-1880 (July 21) 1928

Roentgen-Ray Diagnosis of Anencephaly in Presence of Hydramnion. H. Naujoks.—p. 1818.
Sphincter of Fallopian Tube. A. Hermstein.—p. 1823.
*Serodiagnosis of Gonorrhea in Women. J. Hotta and J. Schwarz.—p. 1829.
Experimental Gonorrhea in Castrated Mice. A. Sternberg, S. Stschedrowitzky and E. Rabinowitsch.—p. 1833.
Therapy of Proliferation of Endometrium. W. Walz.—p. 1839.
*Insulin Treatment of Uterine Hemorrhage. H. Bültemann.—p. 1841.
Intraperitoneal Hemorrhage Threatening Life During Labor. W. Brusten. —p. 1847.
*Clinical Diagnosis of Tuberculosis of Adnexa. J. Braude.—p. 1848.

Serodiagnosis of Gonorrhea in Women.—Hotta and Schwarz tested fifty-six patients with inactive serum. Correct results were obtained in 78.57 per cent of the clinically positive and 89 per cent of the clinically negative cases. Thirty-six of these patients were then tested with active serum according to Bruck's method. Correct results were obtained in only 30 per cent of the clinically positive cases. The authors, therefore, regard the inactive serum as being far superior to active serum for diagnostic purposes.

Insulin Treatment of Uterine Hemorrhage.—Bültemann considers insulin, administered with necessary precautions, a safe remedy for the treatment of uterine hemorrhage. Small amounts of carbohydrates by mouth are sufficient to prevent the symptoms of hypoglycemia. In all cases of metropathia haemorrhagica juvenilis he obtained permanent results. In the cases of hemorrhage in the menopause only temporary relief was obtained. In those cases in which hemorrhage was due to inflammatory processes in the adnexa, insulin had no effect; in inflammatory conditions of the uterus, the results were transient.

Clinical Diagnosis of Tuberculosis of the Adnexa.—Braude has found the symptom of tension of the abdominal wall, a certain "defense," discernible on palpation and bimanual examination, in a number of cases subsequently ascertained to be tuberculosis of the adnexa. This symptom is not accompanied by pain. The condition may be differentiated from peritonitis and perimetritis by the fact that the abdomen is not inflated, but often contracted, and by the absence of nausea and vomiting. It is characteristic of the abdominal tension in adnexal tuberculosis that it continues for months after the general condition of the patient has improved. This distinguishes it from the tension in other inflammatory conditions, such as gonorrhea, and in disseminated carcinoma. The occurrence of this painless abdominal tension may, perhaps, be explained by the fact that in most cases tuberculosis of the adnexa occurs in combination with peritoneal tuberculosis. The absence of this symptom does not prove that tuberculosis is not present in the adnexa. It may mean merely that there is no accompanying tuberculosis of the peritoneum.

Odesskiy Meditsinskiy Jurnal, Odessa

3: 393-472 (June) 1928

*Blood Coagulation in Carcinoma. I. L. Senderowitsch.—p. 393.
Endocrine Factor in Pathology of Skin. L. A. Matusis.—p. 395.
Experimental Data in Cardiac Resuscitation. G. I. Katz and E. A. Leibenson.—p. 407.
*Diagnosis of Syphilis of Liver. A. I. Katz.—p. 409.
Local Anesthesia in Artificial Abortion. F. A. Varshawskiy.—p. 420.
Application of Phytoplankton Method to Differential Diagnosis Between Drowning and Submersion of Cadaver. D. A. Golaev.—p. 425.
Diagnosis of Primary Pulmonary and Bronchial Carcinoma. V. K. Kresin.—p. 431.
Plasmoquinine Treatment of Malaria. L. K. Korowitzkiy.—p. 441.
Value of Chemical Analysis of Blood. E. N. Fabricant.—p. 447.

Blood Coagulation in Diagnosis of Carcinoma.—The simplified blood coagulation test of Bock and Rauche was applied by Senderowitsch to thirty-six patients. It did not prove to be specific for carcinoma. In pulmonary tuberculosis, in spontaneous gangrene and in one case of appendicitis with syphilis, the coagulation time was decreased.

Diagnosis of Syphilis of the Liver.—Syphilis of the liver is often mistaken for another disease, and patients are treated surgically. Katz had a case of apparent ulcer of the duodenum, one of false appendicitis and one simulating echinococcus disease. In all of these, operation was performed. One turned out to be a case of syphilitic cholangeitis and was cured by antisyphilitic treatment. The fever in syphilis of the liver is mostly intermittent, although it may be of hectic type, or similar to that in malaria or in septicopyemia. Under antisyphilitic treatment the fever soon disappears. Icterus occurs in about half of the cases as the result of the action of the syphilitic toxins on the hepatic parenchyma. In most cases the spleen is involved.

Omskiy Meditsinskiy Jurnal, Omsk

2, Nos. 2-3, 1927. Partial Index

Anatomic Division of Abdominal Wall into Supra-Umbilical and Infra-Umbilical Regions. G. A. Valjashko.—p. 8.
Calcium Content of Blood of Healthy and Sick Persons and of Animals. A. A. Yarovoy.—p. 17.
Excretion of Uric Acid with Different Diets. V. A. Leibovich-Livshina.—p. 22.
*Influence of Anesthetics and Operation on Osmotic Resistance of Erythrocytes. S. F. Kossych.—p. 43.
*Familial Hypertension. G. A. Pandikov.—p. 60.
Case of "Epithelioma Cutis." L. A. Rosenyer.—p. 78.
*Congenital Cardiac Defect with Defective Formation of Blood Vessels. K. J. Babaev.—p. 80.
Situs Viscerum Inversus in Fourteen Months Old Child. O. V. Panteleeva.—p. 88.
Syphilis of Lung. V. I. Kondratiev.—p. 90.
*Treatment of Gangrene of Lung with Neoarsphenamine. V. N. Novikov.—p. 98.
*Case of Echinococcus in Cauda Equina. A. K. Skalskiy.—p. 101.
Surgical Treatment of Prolapse of Uterus and Rectum. I. F. Koslov.—p. 107.
*Strangulated Inguinal Hernia of Uterus with Adnexa in Early Infancy. V. I. Marchinin.—p. 113.
Metereologic Conditions of Heliotherapy. V. K. Ivanov.—p. 118.
Medical Control of Physical Culture. R. Anschelievich.—p. 181.
Case of Congenital Absence of Fibula. A. I. Marioupolskiy.—p. 219.

Influence of Anesthetics and of Operation on Osmotic Resistance of Erythrocytes.—From a study of 1,200 cases Kossych concludes: 1. In the first two or three days after operation under general or rectal ether anesthesia, the minimum osmotic resistance of erythrocytes decreases. 2. The same phenomenon occurs after anesthesia without an operation. 3. Chloroform anesthesia increases both the minimum and maximum resistance of erythrocytes. The increase starts on the second or third day and the blood returns to normal in from six to ten days. 4. After a mixed ether-chloroform anesthesia, the minimum erythrocyte resistance decreases and the maximum increases. The action of chloroform, represented by the increase in the maximum, is the more pronounced. Spinal and local anesthesia do not have any effect on the osmotic resistance of erythrocytes. After trauma there is a slight increase in the first three days. Chloroform anesthesia is contraindicated in patients with increased minimum and maximum resistance of erythrocytes, particularly patients with malignant internal growths.

Familial Hypertension.—Pandikov reports a case in which a family of six persons, including both parents and four children, were all subject to hypertension. He believes that essential hypertension is a constitutional disease and that it can be detected in youth. When it is present in both father and mother, there is a probability that it will be transmitted to the children. Early diagnosis is important from the standpoint of establishing a suitable regimen. He has found insulin, subcutaneously, and protein therapy of value in treating essential hypertension.

Congenital Cardiac Defect with Defective Formation of Blood Vessels.—In one of the two cases reported by Babaev, the roentgen rays showed a considerable perforation of the ventricular septum on one side, resulting in a narrow aorta and a wide pulmonary artery. Fusion of the interventricular septum with the bulbar septum was incomplete and had left an opening between the left and right ventricle. In another case he found an unusual combination of stenosis of the pulmonary artery and an area of dulness that indicated the site of the aorta to be high up on the right side. This anomaly of the aorta is rarely differentiated intra vitam.

Treatment of Gangrene of Lung with Neoarsphenamine.—Novikov used neoarsphenamine successfully in two cases of gangrene of the lung. At the time of this report the cures were of three and two months' duration, respectively.

Case of Echinococcus in Cauda Equina.—Skalskiy reports a rare case of echinococcus in the cauda equina. At operation an extramedullary, monolocular echinococcus cyst was found. The connective tissue of the capsule had formed from the meninges. A peculiar fact regarding the cerebrospinal fluid was that it was in a state of gel when cool and returned to a fluid state when warmed.

Strangulated Inguinal Hernia of Uterus with Adnexa in Early Infancy.—A rare case of strangulated inguinal hernia in a 13 months' old girl was reported by Marchinin. The hernia followed whooping cough and ended in strangulation. Operation showed that the hernial sac contained the uterus with both ovaries and tubes. Congestion of the above organs increased the strangulation, which resulted in gangrene at the end of four days. The child died.

2, No. 4, 1927

Kauffmann's Method of Diagnosis of Functional Heart Lesions. N. N. Visozkiy.—p. 3.
*Diagnostic Value of Botelho's Reaction in Cancer. N. G. Tyrkova.—p. 8.
Treatment of Chronic Lymphatic Leukemia with Roentgen Rays. V. I. Marchinin.—p. 13.
Pigmented Tumor in Man Aged Seventy. P. S. Rjabov.—p. 21.
Carcinoma Metastasis in Ovaries (Krukenberg's Tumor). A. Z. Kocherginskiy.—p. 25.
*Differentiation of Chancroid from Lesion of Mixed Type. A. M. Benjaminovich.—p. 31.
Treatment of Suppurative Wounds with Hypertonic Sodium Chloride Solutions. V. I. Korchov.—p. 69.
Classic Cesarean Section from Rectal Indications. V. V. Tretjakov.—p. 81.

Diagnostic Value of Botelho's Reaction in Cancer.—In 80 per cent of sixty patients with cancer Botelho's test gave a positive reaction. Tyrkova found that, contrary to the existing opinion, positive reactions were obtained in cancer in the early stages without cachexia. The reaction is not specific, since it can be caused by increased decomposition of proteins. Protein therapy can change the reaction. Thus of sixteen patients without cancer, seven gave a positive reaction after milk injection. In the nine patients in whom the reaction was negative, the temperature did not rise and patients were only slightly indisposed.

Differentiation of Chancroid from Lesion of Mixed Type.—Benjaminovich finds the hemogram important in the differential diagnosis. He analyzed twenty-nine cases and found that monocytosis was never present in pure chancroid. In five patients, who had syphilis in addition to chancroid, the hemograms showed an early increase in monocytes.

2, Nos. 5-6, 1927

Chemistry of Cholesterol in Exophthalmic Goiter Before and After Iodine Treatment. G. J. Gechtman.—p. 16.
Fevers of Unknown Etiology and the Gallbladder. A. P. Korchov.—p. 30.
Treatment of Epidemic Encephalitis. A. K. Skalskiy.—p. 37.
*Diagnostic Value of Exploratory Puncture of Posterior Wall of Vagina in Ruptured Tubal Pregnancy. I. F. Koslov.—p. 47.
Periodic Malaria Epidemics in Connection with Formation of Sun Spots. N. J. Krinizyn.—p. 54.

Diagnostic Value of Exploratory Puncture of Posterior Wall of Vagina in Ruptured Tubal Pregnancy.—Koslov thinks that exploratory Douglas puncture does not have an unfavorable effect on the result of the operation nor on the postoperative period. There is little danger of injury to the rectum if proper technic is used. The percentage of false diagnoses is small. If the condition of a patient is good, the operation need not be performed immediately after the puncture. Koslov bases his opinions on eighty-four cases in which he operated after exploratory puncture. On the average, these patients left the hospital after the same length of time as did those who were operated on without preliminary puncture.